



## SECURITY AUDIT REPORT

# Fun Token

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DATE

23 Sep 2025

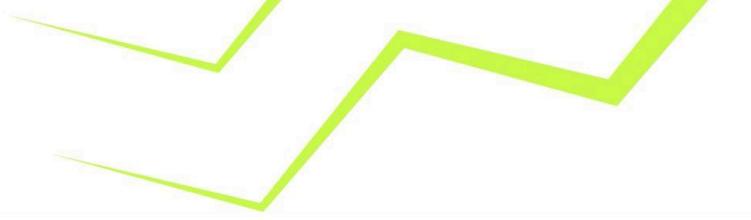
PREPARED BY

**OxTeam.**

WEB3 AUDITS

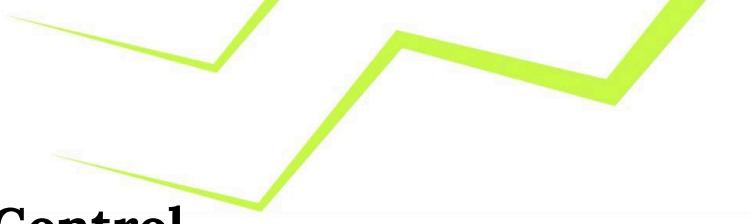
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# Revision History & Version Control

Version	Date	Author's	Description
1.0	23 Sep 2025	Gurkirat, Manoj & Aditya	Initial Audit Report

OxTeam conducted a comprehensive Security Audit on the Fun Token to ensure the overall code quality, security, and correctness. The review focused on ensuring that the code functions as intended, identifying potential vulnerabilities, and safeguarding the integrity of Fun Token's operations against possible attacks.

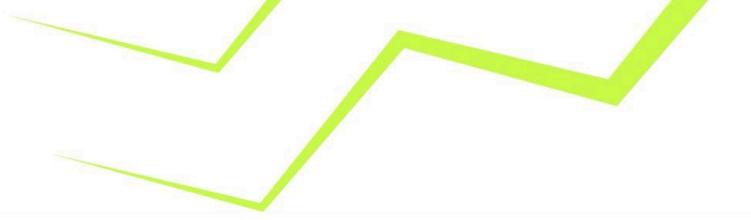
## Report Structure

The report is divided into two primary sections:

- Executive Summary** : Provides a high-level overview of the audit findings.
- Technical Analysis** : Offers a detailed examination of the Smart contracts code.

### Note :

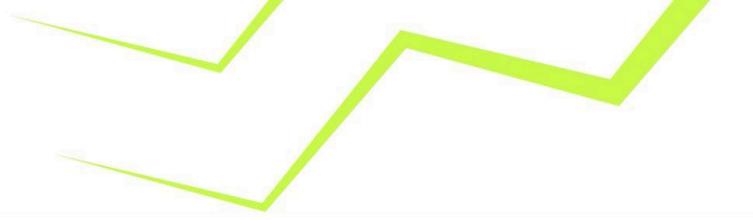
The analysis is static and manual, exclusively focused on the smart contract code. The information provided in this report should be used to assess the security, quality, and expected behavior of the code.



## 1.0 Disclaimer

This is a summary of our audit findings based on our analysis, following industry best practices as of the date of this report. However, it is important to understand that no security audit can guarantee complete protection against all possible security threats. The audit focuses on Smart contracts coding practices and any issues found in the code, as detailed in this report. For a complete understanding of our analysis, you should read the full report. We have made every effort to conduct a thorough analysis, but it's important to note that you should not rely solely on this report and cannot make claims against us based on its contents. We strongly advise you to perform your own independent checks before making any decisions. Please read the disclaimer below for more information.

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## 2.0 Executive Summary

### 2.1 Overview

OxTeam has meticulously audited the Fun Token Smart contracts project. The primary objective of this audit was to assess the security, functionality, and reliability of the Fun Token's before their deployment on the blockchain. The audit focused on identifying potential vulnerabilities, evaluating the contract's adherence to best practices, and providing recommendations to mitigate any identified risks. The comprehensive analysis conducted during this period ensures that the Fun Token is robust and secure, offering a reliable environment for its users.

### 2.2 Scope

The scope of this audit involved a thorough analysis of the Fun Token Smart contracts, focusing on evaluating its quality, rigorously assessing its security, and carefully verifying the correctness of the code to ensure it functions as intended without any vulnerabilities.

#### Files in Examination:

Language	Solidity
In-Scope	<ul style="list-style-type: none"><li>contracts\FUNGGiveaway.sol</li><li>contracts\GeomeanOracle.sol</li><li>contracts\USDTtoFUNOracle.sol</li></ul>
Commit Hash	964fd0679be861f1e4866df03792d39ed76f20ec

**OUT-OF-SCOPE:** External Smart contracts code, other imported code.

### 2.3 Audit Summary

Name	Verified	Audited	Vulnerabilities
Fun Token	Yes	Yes	Refer Section 5.0

### 2.4 Vulnerability Summary

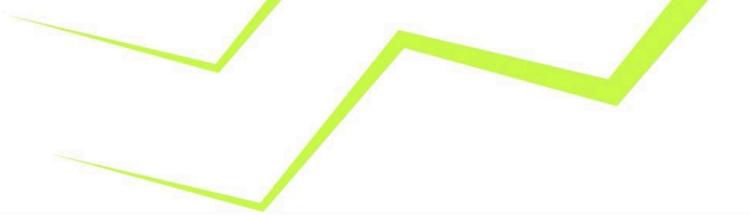
● High	● Medium	● Low	● Informational
1	1	9	2

● High

● Medium

● Low

● Informational



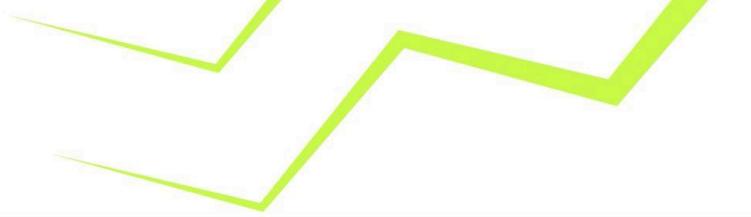
## 2.5 Recommendation Summary

Issues	Severity			
	● High	● Medium	● Low	● Informational
Open	1	1	9	2
Resolved				
Acknowledged				
Partially Resolved				

- **Open:** Unresolved security vulnerabilities requiring resolution.
- **Resolved:** Previously identified vulnerabilities that have been fixed.
- **Acknowledged:** Identified vulnerabilities noted but not yet resolved.
- **Partially Resolved:** Risks mitigated but not fully resolved.

## 2.6 Summary of Findings

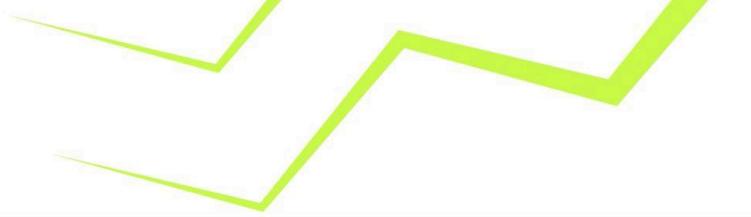
ID	Title	Severity	Fixed
H-01	Incorrect Deadline Initialization Contract Uses Expired Timestamp (Jan 1, 2025 Instead of Dec 31, 2025)	High	
M-01	state.cardinality not updated correctly in _updatePool, causing observe/_floorObservation to miss valid history	Medium	
L-01	Unused State Variables: maxInterestDuration, contractDeployTime, totalWeight	Low	
L-02	Misleading Revert Message in lockTokens function	Low	
L-03	Misleading Revert Message in withdrawWithInterest function	Low	
L-04	Misleading Revert Message in _beforeInitialize() function	Low	
L-05	Redundant code in withdrawWithInterest()	Low	
L-06	Use Named Return Variable to Save Gas	Low	
L-07	Redundant Checks Between manuallyTriggerMilestone and _triggerPriceMilestone	Low	
L-08	Redundant Getter Functions for Public State Variables	Low	
L-09	State variables that could be declared immutable	Low	
I-01	nonReentrant Modifier is Not the First Modifier	Info	
I-02	Multiple Roles Granted to Same Admin in Constructor	Info	



## 3.0 Checked Vulnerabilities

We examined Smart contracts for widely recognized and specific vulnerabilities. Below are some of the common vulnerabilities considered.

Category	Check Items
<b>Source Code Review</b>	<ul style="list-style-type: none"><li>→ Reentrancy Vulnerabilities</li><li>→ Ownership Control</li><li>→ Time-Based Dependencies</li><li>→ Gas Usage in Loops</li><li>→ Transaction Sequence Dependencies</li><li>→ Style Guide Compliance</li><li>→ EIP Standard Compliance</li><li>→ External Call Verification</li><li>→ Mathematical Checks</li><li>→ Type Safety</li><li>→ Visibility Settings</li><li>→ Deployment Accuracy</li><li>→ Repository Consistency</li></ul>
<b>Functional Testing</b>	<ul style="list-style-type: none"><li>→ Business Logic Validation</li><li>→ Feature Verification</li><li>→ Access Control and Authorization</li><li>→ Escrow Security</li><li>→ Token Supply Management</li><li>→ Asset Protection</li><li>→ User Balance Integrity</li><li>→ Data Reliability</li><li>→ Emergency Shutdown Mechanism</li></ul>



## 4.0 Techniques , Methods & Tools Used

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

- **Structural Analysis:**

This involves examining the overall design and architecture of the smart contract. We ensure that the contract is logically organised, scalable, and follows industry best practices. This step is crucial for identifying potential structural issues that could lead to vulnerabilities or maintenance challenges in the future.

- **Static Analysis:**

Static analysis is conducted using automated tools to scan the contract's codebase for common vulnerabilities and security risks without executing the code. This process helps identify issues such as reentrancy, arithmetic errors, and potential denial-of-service (DOS) vulnerabilities early on, allowing for quick remediation.

- **Code Review / Manual Analysis:**

A manual, in-depth review of the smart contract's code is performed to verify the logic and ensure it matches the intended functionality as described in the project's documentation. During this phase, we also confirm the findings from the static analysis and check for any additional issues that may not have been detected by automated tools.

- **Dynamic Analysis:**

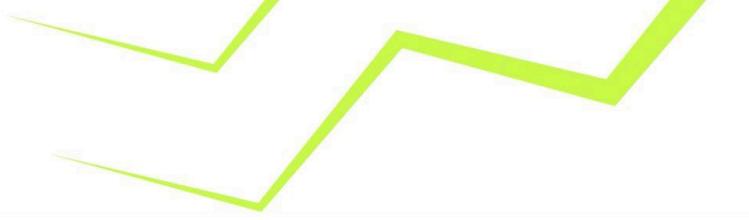
Dynamic analysis involves executing the smart contract in various controlled environments to observe its behaviour under different conditions. This step includes running comprehensive test cases, performing unit tests, and monitoring gas consumption to ensure the contract operates efficiently and securely in real-world scenarios.

- **Tools and Platforms Used for Audit:**

Utilising tools such as Remix , Slither, Aderyn, Solhint for static analysis, and platforms like Hardhat and Foundry for dynamic testing and simulation.

**Note:** The following values for "Severity" mean:

- **High:** Direct and severe impact on the funds or the main functionality of the protocol.
- **Medium:** Indirect impact on the funds or the protocol's functionality.
- **Low:** Minimal impact on the funds or the protocol's main functionality.
- **Informational:** Suggestions related to good coding practices and gas efficiency.



## 5.0 Technical Analysis

High

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[H-01] Incorrect Deadline Initialization Contract Uses Expired Timestamp (Jan 1, 2025 Instead of Dec 31, 2025)

Severity

High

Location	Functions
Contracts\FUNGiveaway.sol	→ <code>_initializePriceMilestones</code>

### Issue Description

The contract is designed to operate with a program deadline of December 31, 2025, as referenced throughout the code and documentation. However, the hardcoded deadline timestamp (1735689600) corresponds to January 1, 2025, 00:00:00 UTC.

This means the system immediately considers the deadline as passed upon deployment, breaking core functionality.

### Impact / Proof of Concept

- All functions that depend on `priceMilestones[i].deadline` (e.g., `lockTokens`, `withdrawPrincipal`, `withdrawWithInterest`) will behave incorrectly.
- This essentially **invalidates the program logic and lifecycle**, making the contract unusable in practice.

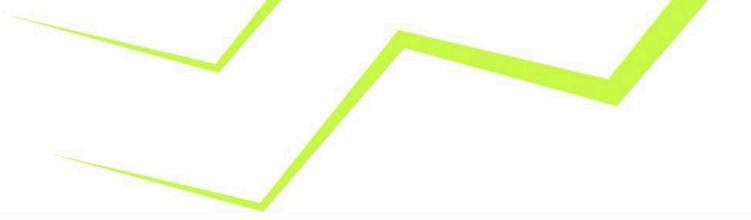
```
function _initializePriceMilestones() private {
    uint256 deadline = 1735689600; // 31 DEC 2025 00:00:00 UTC
```

### Recommendation

Correct the timestamp to match the intended deadline of **Dec 31, 2025, 23:59:59 UTC** → **1767225599**.



Medium



## [M-01] state.cardinality not updated correctly in `_updatePool`, causing `observe/_floorObservation` to miss valid history

### Severity

MEDIUM

Location	Functions/Variables
Contracts\GeomeanOracle.sol	→ <code>_updatePool / _floorObservation</code>

### Issue Description

The `_updatePool` function defers updating `state.cardinality` unless the updated index wraps around to 0

```
if (state.cardinalityNext > state.cardinality && indexUpdated == 0) {
    state.cardinality = state.cardinalityNext;
}
```

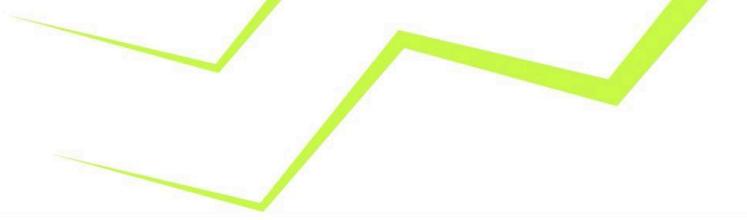
`_updatePool` computes `capacity = state.cardinalityNext` and computes `indexUpdated = (state.index + 1) % capacity`. It then writes to `observations[poolId][indexUpdated]` and sets `state.index = indexUpdated`.

Hence `state.cardinality` is left unchanged until `indexUpdated == 0`. Thus `state.index` may become  $\geq$  `state.cardinality`, and `observe() / _floorObservation()` uses `card = state.cardinality` but would only be able to use the latest observation `newest = observations[poolId][state.index]`

Eg:-

Start state:

- `state.cardinality = 1`
- `state.cardinalityNext = 1`
- `state.index = 0`



- `observations[poolID][0].blockTimestamp = 100` (initial observation)

User calls `increaseCardinalityNext(4)`:

- `state.cardinality = 1`
- `state.cardinalityNext = 4`

Now a swap occurs at time `200` which triggers `_updatePool`:

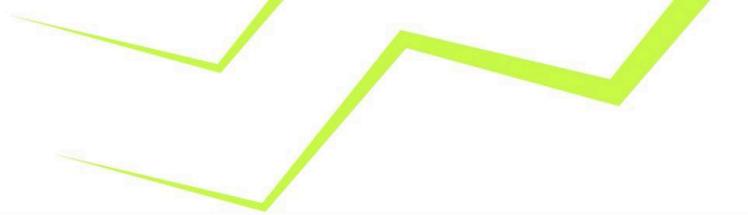
1. The function sets `capacity = state.cardinalityNext = 4`.
2. It computes `indexUpdated = (state.index + 1) % capacity = (0 + 1) % 4 = 1`.
3. Writes `observations[1].timestamp = 200` (`initialized = true`)
4. Sets `state.index = 1`
5. `state.cardinality` remains 1 (because `indexUpdated != 0`) so `state.cardinality` is not updated.
6. Now call `observe` is called which internally calls `_floorObservation(targetTime = 150)`:
  - a. `card = state.cardinality = 1`
  - b. `newest = observations[state.index] = observations[1]` (timestamp 200)
  - c. `targetTime < newest.timestamp` → for loop to `card = 1` steps:
  - d. Check `observations[1]`: timestamp 200 > 150 → not good
  - e. Loop ends (only 1 step allowed) → revert **InsufficientObservationHistory()**
7. But `observations[0]` (`t = 100`) exists and would satisfy the query

## Impact / Proof of Concept

- A caller trying to compute a TWAP in the time window that should be available will get **InsufficientObservationHistory()** reverts even though the data physically exists.

## Recommendation

```
if (state.cardinalityNext > state.cardinality) {  
    state.cardinality = state.cardinalityNext;  
}
```



Low

## [L-01] Unused State Variables: `maxInterestDuration`, `contractDeployTime`, `totalWeight`

### Severity

LOW

Location	Functions/Variables
Contracts\FunGiveaway.sol	→ <code>uint256 public maxInterestDuration;</code> , <code>function updateMaxInterestDuration,</code> <code>contractDeployTime, totalWeight</code>

### Issue Description

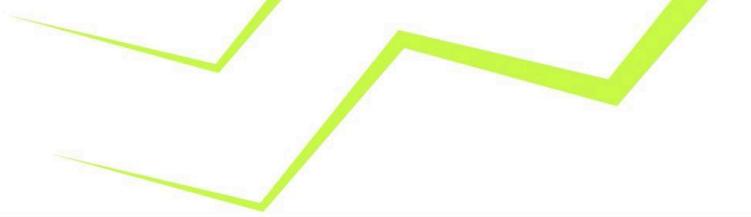
The state variables `maxInterestDuration`, `contractDeployTime`, and `totalWeight` are declared in the contract but are never actually used in any computation or logic. Additionally, the function `updateMaxInterestDuration` is defined but not utilized anywhere. Unused state variables and functions increase contract size unnecessarily which leads to higher deployment gas costs.

### Impact / Proof of Concept

Although these unused variables do not affect the current functionality or security of the contract, they contribute to higher gas costs during deployment. Removing these variables and unused functions will optimize the contract and reduce deployment costs.

### Recommendation

- Remove the unused state variables: `maxInterestDuration`, `contractDeployTime`, `totalWeight`.
- Remove the unused function `updateMaxInterestDuration`.



## [L-02] Misleading Revert Message in `lockTokens` function

### Severity

LOW

Location	Functions/Variables
Contracts\FunGiveaway.sol	→ <code>lockTokens</code>

### Issue Description

In the `lockTokens` function, the contract reverts with `DeadlineNotReached` if the first milestone's deadline has already passed:

```
if (block.timestamp >= priceMilestones[0].deadline) revert  
DeadlineNotReached();
```

This is misleading, because the user is actually too late to lock tokens, not that the deadline hasn't been reached yet.

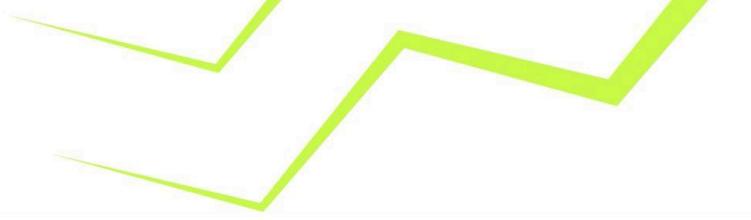
### Impact / Proof of Concept

It doesn't have a direct impact on the protocol.

### Recommendation

- Update the revert message to accurately reflect the condition,

```
error DeadlineExceeded();  
  
if (block.timestamp >= priceMilestones[0].deadline) revert  
DeadlineExceeded();
```



## [L-03] Misleading Revert Message in `withdrawWithInterest` function

### Severity

LOW

Location	Functions/Variables
Contracts\FunGiveaway.sol	→ <code>withdrawWithInterest</code>

### Issue Description

In the `withdrawWithInterest()` function, the following code is used:

```
if (distributionActive) {
    revert DistributionNotActive();
}
```

`DistributionActive` being true indicates that milestone distributions are active, but the error message `DistributionNotActive` is misleading.

### Impact / Proof of Concept

It doesn't have a direct impact on the protocol.

### Recommendation

- Update the revert message to accurately reflect the condition,

```
error DistributionActive();

if (!distributionActive) {
    revert DistributionActive();
}
```



## [L-04] Misleading Revert Message in `_beforeInitialize()` function

### Severity

LOW

Location	Functions/Variables
Contracts\GeomeanOracle.sol	→ <code>_beforeInitialize()</code>

### Issue Description

In the `_beforeInitialize()` function, the following code is used:

```
function _beforeInitialize(address, PoolKey calldata key, uint160)
internal view override returns (bytes4) {
    if (key.fee != 0 || key.tickSpacing != TickMath.MAX_TICK_SPACING) {
        revert OnlyOneOraclePoolAllowed();
    }
    return BaseHook.beforeInitialize.selector;
}
```

`OnlyOneOraclePoolAllowed()` is a confusing name for a check that simply requires `fee == 0 && tickSpacing == TickMath.MAX_TICK_SPACING`. Rename to `InvalidOraclePoolConfig()` or similar.

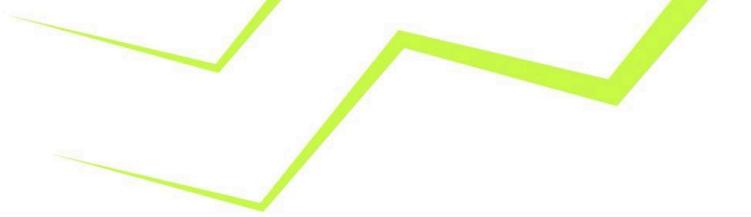
### Impact / Proof of Concept

- It doesn't have a direct impact on the protocol.

### Recommendation

- Update the revert message to accurately reflect the condition,

```
error InvalidOraclePoolConfig();
function _beforeInitialize(address, PoolKey calldata key, uint160)
internal view override returns (bytes4) {
    if (key.fee != 0 || key.tickSpacing != TickMath.MAX_TICK_SPACING) {
        revert InvalidOraclePoolConfig();
    }
    return BaseHook.beforeInitialize.selector;}
```



## [L-05] Redundant code in withdrawWithInterest()

### Severity

LOW

Location	Functions/Variables
Contracts\FunGiveaway.sol	→ withdrawWithInterest

### Issue Description

In the withdrawWithInterest() function, the following code appears inside the for loop:

```
if (lockDuration > maxInterestDuration) {  
    lockDuration = maxInterestDuration;  
}
```

- This variable (lockDuration) is updated after the interest calculation, which means the cap on lockDuration has no effect on the computed interest.
- maxInterestDuration is also therefore redundant in the current implementation.

### Impact / Proof of Concept

- No functional or security impact, the interest is still calculated using the original lockDuration.
- However, the presence of unused logic costs gas.

### Recommendation

- Remove the "if" block entirely, cause there is no use of it in the computation.

```
function withdrawWithInterest() external whenNotPaused nonReentrant {  
    if (hasWithdrawn[msg.sender]) revert AlreadyWithdrawn();  
    if (block.timestamp < priceMilestones[0].deadline) revert  
DeadlineNotReached();  
  
    if (distributionActive) {  
        revert DistributionNotActive(); // Reuse error: milestones  
active, can't withdraw with interest
```



```
}

uint256 totalAmount = 0;
uint256 totalInterest = 0;

UserLock[] storage locks = userLocks[msg.sender];

for (uint256 i = 0; i < locks.length; i++) {
    if (!locks[i].withdrawn) {
        uint256 lockDuration = block.timestamp - locks[i].lockTime;
        uint256 interest = (locks[i].amount * ANNUAL_INTEREST_RATE *
lockDuration) /
(100 * SECONDS_PER_YEAR);

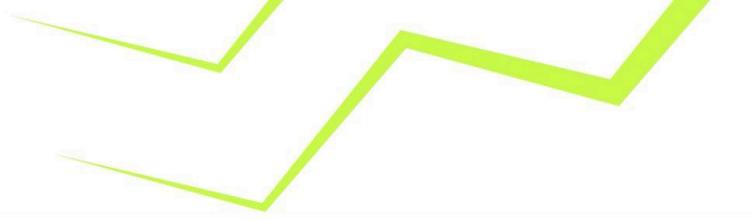
        totalAmount = totalAmount + locks[i].amount;
        totalInterest = totalInterest + interest;
        locks[i].withdrawn = true;
    }
}

hasWithdrawn[msg.sender] = true;

if (totalAmount != 0) {
    totalLockedTokens = totalLockedTokens - totalAmount;
    uint256 totalPayout = totalAmount + totalInterest;

    // Transfer principal + interest from treasury
    funToken.safeTransferFrom(treasuryWallet, msg.sender,
totalPayout);

    emit TokensWithdrawn(msg.sender, totalPayout, totalInterest);
}
}
```



## [L-06] Use Named Return Variable for to Save Gas

### Severity

Low

Location	Functions/Variables
Contracts\FunGiveaway.sol	→ All functions with unnamed return variable

### Issue Description

Several functions in the contract use explicit return statements with locally defined variables rather than leveraging Solidity's named return variables. Using named return variables can reduce gas usage by avoiding extra stack operations and eliminating the explicit return statement.

#### Example:

In getUnclaimedRewards, the function defines a local variable and explicitly returns it:

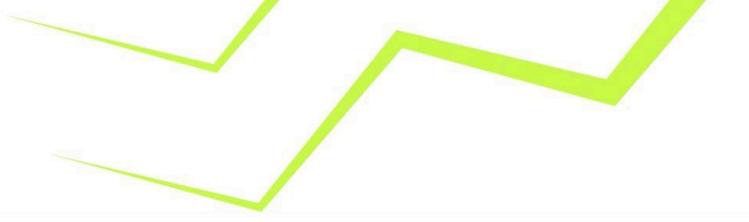
```
uint256 totalRewards = 0;  
// ... computation ...  
return totalRewards;
```

### Impact / Proof of Concept:

- No functional impact, the function works correctly.
- Gas savings are minimal, but cumulative savings can matter in large-scale usage.

### Recommendation:

- Refactor functions to use named return variables instead of explicit return statements where applicable.
- Convert to a **named return variable** pattern like below:



```
function getUnclaimedRewards(address _user) external view returns
(uint256 totalRewards) {
    UserLock[] storage locks = userLocks[_user];
    if (locks.length == 0) return 0;

    for (uint256 i = 0; i < currentPriceLevel; i++) {
        if (priceMilestones[i].triggered && !hasClaimed[_user][i]) {
            uint256 userEligibleWeight = 0;
            for (uint256 j = 0; j < locks.length; j++) {
                if ((locks[j].eligibleMilestones & (1 << i)) != 0) {
                    userEligibleWeight = userEligibleWeight +
locks[j].weight;
                }
            }
            if (userEligibleWeight != 0 && milestoneEligibleWeight[i] != 0) {
                totalRewards = totalRewards + (userEligibleWeight *
priceMilestones[i].rewardAmount) / milestoneEligibleWeight[i];
            }
        }
    }
}
```



## [L-07] Redundant Checks Between `manuallyTriggerMilestone` and `_triggerPriceMilestone`

### Severity

LOW

Location	Functions/Variables
Contracts\FunGiveaway.sol	→ <code>manuallyTriggerMilestone</code> → <code>_triggerPriceMilestone</code>

### Issue Description

Both `manuallyTriggerMilestone` and `_triggerPriceMilestone` functions perform the same validations:

1. `manuallyTriggerMilestone` already ensures that `_level < priceMilestones.length`.
2. `_triggerPriceMilestone` again checks for `_level >= priceMilestones.length` and `priceMilestones[_level].triggered`.

### Impact / Proof of Concept

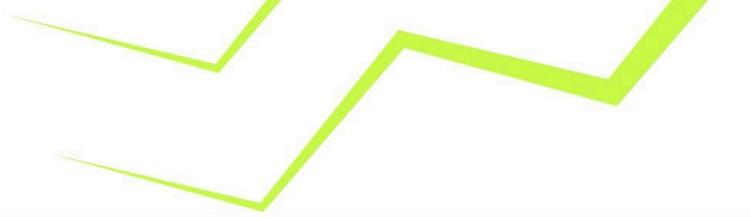
- No functional impact; the contract works correctly.
- Gas inefficiency unnecessary logic in `_triggerPriceMilestone`.

### Recommendation

- Consolidate validation to only one place: Remove the checks in `_triggerPriceMilestone`.

```
function _triggerPriceMilestone(uint256 _level) private {

    priceMilestones[_level].triggered = true;
    priceMilestones[_level].triggeredAt = block.timestamp;
    // Activate distribution for this level and all previous levels
    distributionActive = true;
    currentPriceLevel = _level + 1;
    emit PriceMilestoneTriggered(_level,
priceMilestones[_level].priceThreshold, block.timestamp); }
```



## [L-08] Redundant Getter Functions for Public State Variables

### Severity

LOW

Location	Functions/Variables
Contracts\FunGiveaway.sol	→ getter functions

### Issue Description

The contract defines multiple getter functions for state variables that are already declared as public, which automatically generates a getter in Solidity. Making the following functions redundant:

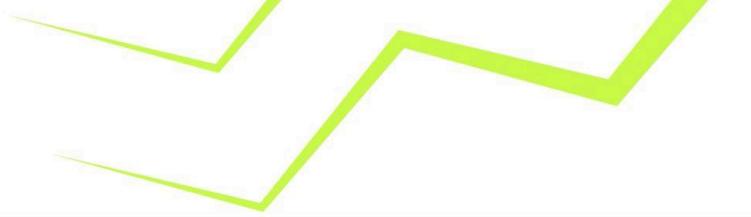
- `getMilestoneEligibleWeight(uint256 _milestoneIndex)`
- `getContractBalance()`
- `getCurrentPrice()`
- `getUserLock(address _user, uint256 _index)`

### Impact / Proof of Concept

- No functional impact; the contract works correctly.
- Removing redundant functions can reduce deployment gas, because every function increases the contract bytecode size.

### Recommendation

- Remove the above redundant functions and protocol could use the automatically generated getters for public state variables.



## [L-9] State variables that could be declared immutable

### Severity

LOW

Location	Functions/Variables
Contracts\GeomeanOracle.sol	→ <code>_beforeInitialize()</code>

### Issue Description

contractDeployTime and \_decimals are only assigned in the constructor. Therefore it can be made immutable as immutable values are cheaper to read. State variables that are not updated following deployment should be declared immutable to save gas.

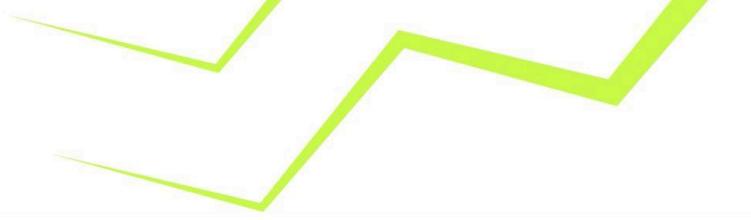
### Impact / Proof of Concept

While this issue doesn't directly impact the functionality of the contract, the contract can benefit from the use of constant and immutable keywords for variables that do not change after deployment. This could save gas costs by storing the variables directly in the bytecode.

### Recommendation

- Add the immutable attribute to state variables that never change or are set only in the constructor.

```
uint256 public immutable contractDeployTime;
uint8 private immutable _decimals;
```



## Info

### [I-01] **nonReentrant** Modifier is Not the First Modifier

#### Severity

INFO

Location	Functions/Variables
Contracts\FUNGiveaway.sol	<p>→ Line 137: <code>lockTokens</code> → Line 182: <code>withdrawPrincipal</code> → Line 233: <code>claimRewards</code> → Line 279: <code>withdrawWithInterest</code></p>

#### Issue Description

The functions use multiple modifiers, but the `nonReentrant` modifier is not placed first. Best practices recommend placing `nonReentrant` as the first modifier to ensure it executes before other modifiers.

#### Impact / Proof of Concept

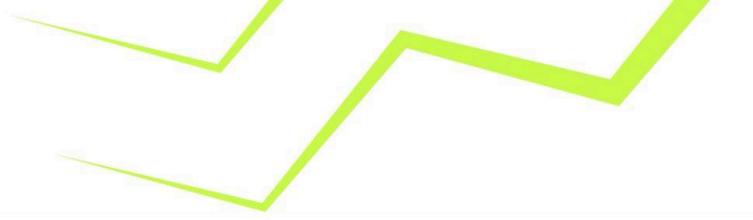
This issue does not directly impact the protocol's functionality. However, following this defensive coding practice reduces the attack surface if future modifiers are updated to include external calls.

#### Recommendation

- Reorder modifiers so that `nonReentrant` is always placed first.

Eg.,

```
function lockTokens(uint256 _amount) external nonReentrant
whenNotPaused {
    ...
}
```



## [I-02] Multiple Roles Granted to Same Admin in Constructor

### Severity

INFO

Location	Functions
Contracts\FUNGiveaway.sol	→ constructor

### Issue Description

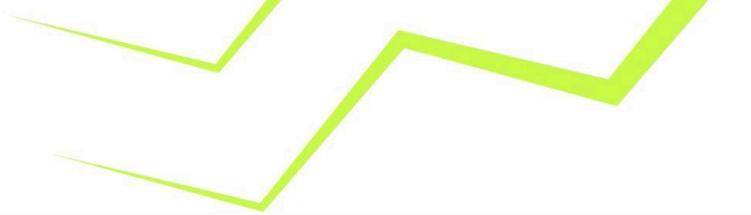
Protocol grants the same \_admin address for all three roles: DEFAULT\_ADMIN\_ROLE, OPERATOR\_ROLE, and PRICE\_UPDATER\_ROLE. While this is functionally valid, it may be unnecessary if the protocol intends for role separation.

### Impact

Currently, this setup does not break functionality, but it reduces clarity of the role-based access control design.

### Recommendation

- If separation is intended, assign roles to distinct addresses.
- If separation is not intended, protocol could consolidate roles for clarity.



## 6.0 Auditing Approach and Methodologies Applied

The Solidity smart contract was audited using a comprehensive approach to ensure the highest level of security and reliability. Careful attention was given to the following key areas to ensure the overall quality of the code:

- **Code quality and structure:** We conducted a detailed review of the codebase to identify any potential issues related to code structure, readability, and maintainability. This included analysing the overall architecture of the Solidity smart contract and reviewing the code to ensure it follows best practices and coding standards.
- **Security vulnerabilities:** Our team used manual techniques to identify any potential security vulnerabilities that could be exploited by attackers. This involved a thorough analysis of the code to identify any potential weaknesses, such as buffer overflows, injection vulnerabilities, signatures, and deprecated functions.
- **Documentation and comments:** Our team reviewed the code documentation and comments to ensure they accurately describe the code's intended behaviour and logic. This helps developers to better understand the codebase and make modifications without introducing new issues.
- **Compliance with best practices:** We checked that the code follows best practices and coding standards that are recommended by the Solidity community and industry experts. This ensures that the Solidity smart contract is secure, reliable, and efficient.

Our audit team followed OWASP and Ethereum (Solidity) community security guidelines for this audit. As a result, we were able to identify potential issues and provide recommendations to improve the smart contract's security and performance.

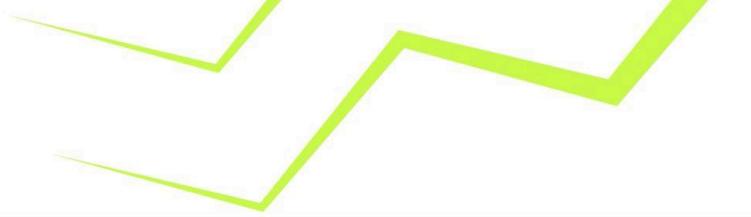
Throughout the audit of the smart contracts, our team placed great emphasis on ensuring the overall quality of the code and the use of industry best practices. We meticulously reviewed the codebase to ensure that it was thoroughly documented and that all comments and logic aligned with the intended behaviour. Our approach to the audit was comprehensive, methodical, and aimed at ensuring that the smart contract was secure, reliable, and optimised for performance.

### 6.1 Code Review / Manual Analysis

Our team conducted a manual analysis of the Solidity smart contracts to identify new vulnerabilities or to verify vulnerabilities found during static and manual analysis. We carefully analysed every line of code and made sure that all instructions provided during the onboarding phase were followed. Through our manual analysis, we were able to identify potential vulnerabilities that may have been missed by automated tools and ensure that the smart contract was secure and reliable.

### 6.2 Tools Used for Audit

In the course of our audit, we leveraged a suite of tools to bolster the security and performance of our program. While our team drew on their expertise and industry best practices, we also integrated various tools into our development environment. Noteworthy among them are Remix, Slither, Aderyn, Solhint for Static Analysis and Hardhat & Foundry for Dynamic Analysis. This holistic approach ensures a thorough analysis, uncovering potential issues that automated tools alone might overlook. OxTeam takes pride in utilising these tools, which significantly contribute to the quality, security, and maintainability of our codebase.



## 7.0 Limitations on Disclosure and Use of this Report

This report contains information concerning potential details of the Fun Token Project and methods for exploiting them. OxTeam recommends that special precautions be taken to protect the confidentiality of both this document and the information contained herein. Security Assessment is an uncertain process, based on past experiences, currently available information, and known threats. All information security systems, which by their nature are dependent on human beings, are vulnerable to some degree. Therefore, while OxTeam considers the major security vulnerabilities of the analysed systems to have been identified, there can be no assurance that any exercise of this nature will identify all possible vulnerabilities or propose exhaustive and operationally viable recommendations to mitigate those exposures. In addition, the analysis set forth herein is based on the technologies and known threats as of the date of this report. As technologies and risks change over time, the vulnerabilities associated with the operation of the Fun Token Smart contracts Code Base described in this report, as well as the actions necessary to reduce the exposure to such vulnerabilities, will also change. OxTeam makes no undertaking to supplement or update this report based on changed circumstances or facts of which OxTeam becomes aware after the date hereof, absent a specific written agreement to perform the supplemental or updated analysis. This report may recommend that OxTeam use certain software or hardware products manufactured or maintained by other vendors. OxTeam bases these recommendations upon its prior experience with the capabilities of those products. Nonetheless, OxTeam does not and cannot warrant that a particular product will work as advertised by the vendor, nor that it will operate in the manner intended. This report was prepared by OxTeam for the exclusive benefit of Fun Token and is proprietary information. The Non-Disclosure Agreement (NDA) in effect between OxTeam and Fun Token governs the disclosure of this report to all other parties including product vendors and suppliers.