InterFi NETWORK

SMART CONTRACT AUDIT

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PREPARED FOR

TIPINU

INTRODUCTION

Auditing Firm	InterFi Network
Client Firm	TipInu
Methodology	Automated Analysis, Manual Code Review
Language	Solidity
Proxy	0x0C5E74d20A13aBc25457c781f986255d9734fC3e
Implementation	0xFC6E7d6Beb350152Cd9c289E5633f522e86B0a77
Blockchain	Binance Smart Chain
Centralization	Active ownership
Commit	2b5e5bcd2771755c6e2e37630237baa14d5f3c79
Website	https://tipinu.xyz/
Telegram	https://t.me/TipInuBSC/
X (Twitter)	https://twitter.com/TipInuxyz/
Report Date	April 10, 2024

ℹ Verify the authenticity of this report on our website: https://www.github.com/interfinetwork

EXECUTIVE SUMMARY

InterFi has performed the automated and manual analysis of solidity codes. Solidity codes were reviewed for common contract vulnerabilities and centralized exploits. Here's a quick audit summary:

Status	Critical 🔴	Major 🟠	Medium 🟡	Minor 🟢	Unknown 🟤
Open	0	0	0	6	0
Acknowledged	0	2	0	2	2
Resolved	0	0	0	3	0
Major 🟠 Privileges	Authorize Contract Upgrade, Blacklist, Freeze Contract				
Noteworthy Privileges	Remove Last Pair, Add Pair, Set Fees, Set Staking Amount, Set Reward Distributor				

ℹ️ Please note that smart contracts deployed on blockchains aren't resistant to exploits, vulnerabilities and/or hacks. Blockchain and cryptography assets utilize new and emerging technologies. These technologies present a high level of ongoing risks. For a detailed understanding of risk severity, source code vulnerability, and audit limitations, kindly review the audit report thoroughly.

ℹ️ Please note that centralization privileges regardless of their inherited risk status - constitute an elevated impact on smart contract safety and security.

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SCOPE OF WORK

InterFi was consulted by TipInu to conduct the smart contract audit of their solidity source codes. The audit scope of work is strictly limited to mentioned solidity file(s) only:

- TipInu_Token.sol

ℹ️ If source codes are not deployed on the main net, they can be modified or altered before main-net deployment. Verify the contract's deployment status below:

Public Contract Link	
https://bscscan.com/address/0x0C5E74d20A13aBc25457c781f986255d9734fC3e#code	
Contract Name	TipInu_Token
Compiler Version	0.8.19
License	MIT

AUDIT METHODOLOGY

Smart contract audits are conducted using a set of standards and procedures. Mutual collaboration is essential to performing an effective smart contract audit. Here's a brief overview of InterFi's auditing process and methodology:

CONNECT

- The onboarding team gathers source codes, and specifications to make sure we understand the size, and scope of the smart contract audit.

AUDIT

- Automated analysis is performed to identify common contract vulnerabilities. We may use the following third-party frameworks and dependencies to perform the automated analysis:
  - Remix IDE Developer Tool
  - Open Zeppelin Code Analyzer
  - SWC Vulnerabilities Registry
  - DEX Dependencies, e.g., Pancakeswap, Uniswap
- Simulations are performed to identify centralized exploits causing contract and/or trade locks.
- A manual line-by-line analysis is performed to identify contract issues and centralized privileges. We may inspect below mentioned common contract vulnerabilities, and centralized exploits:

Centralized Exploits	○ Token Supply Manipulation ○ Access Control and Authorization ○ Assets Manipulation ○ Ownership Control ○ Liquidity Access ○ Stop and Pause Trading ○ Ownable Library Verification

Common Contract Vulnerabilities	○ Integer Overflow ○ Lack of Arbitrary limits ○ Incorrect Inheritance Order ○ Typographical Errors ○ Requirement Violation ○ Gas Optimization ○ Coding Style Violations ○ Re-entrancy ○ Third-Party Dependencies ○ Potential Sandwich Attacks ○ Irrelevant Codes ○ Divide before multiply ○ Conformance to Solidity Naming Guides ○ Compiler Specific Warnings ○ Language Specific Warnings

REPORT

- The auditing team provides a preliminary report specifying all the checks which have been performed and the findings thereof.
- The client's development team reviews the report and makes amendments to solidity codes.
- The auditing team provides the final comprehensive report with open and unresolved issues.

PUBLISH

- The client may use the audit report internally or disclose it publicly.

ℹ️ It is important to note that there is no pass or fail in the audit, it is recommended to view the audit as an unbiased assessment of the safety of solidity codes.

RISK CATEGORIES

Smart contracts are generally designed to hold, approve, and transfer tokens. This makes them very tempting attack targets. A successful external attack may allow the external attacker to directly exploit. A successful centralization-related exploit may allow the privileged role to directly exploit. All risks which are identified in the audit report are categorized here for the reader to review:

Risk Type	Definition
Critical 🔴	These risks could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.
Major 🟠	These risks are hard to exploit but very important to fix, they carry an elevated risk of smart contract manipulation, which can lead to high-risk severity.
Medium 🟡	These risks should be fixed, as they carry an inherent risk of future exploits, and hacks which may or may not impact the smart contract execution. Low-risk re-entrancy-related vulnerabilities should be fixed to deter exploits.
Minor 🟢	These risks do not pose a considerable risk to the contract or those who interact with it. They are code-style violations and deviations from standard practices. They should be highlighted and fixed nonetheless.
Unknown 🟤	These risks pose uncertain severity to the contract or those who interact with it. They should be fixed immediately to mitigate the risk uncertainty.

All statuses which are identified in the audit report are categorized here for the reader to review:

Status Type	Definition
Open	Risks are open.
Acknowledged	Risks are acknowledged, but not fixed.
Resolved	Risks are acknowledged and fixed.

CENTRALIZED PRIVILEGES

Centralization risk is the most common cause of cryptography asset loss. When a smart contract has a privileged role, the risk related to centralization is elevated.

There are some well-intended reasons have privileged roles, such as:

- Privileged roles can be granted the power to `pause()` the contract in case of an external attack.
- Privileged roles can use functions like, `include()`, and `exclude()` to add or remove wallets from fees, swap checks, and transaction limits. This is useful to run a presale and to list on an exchange.

Authorizing privileged roles to externally-owned-account (EOA) is dangerous. Lately, centralization-related losses are increasing in frequency and magnitude.

- The client can lower centralization-related risks by implementing below mentioned practices:
- Privileged role's private key must be carefully secured to avoid any potential hack.
- Privileged role should be shared by multi-signature (multi-sig) wallets.
- Authorized privilege can be locked in a contract, user voting, or community DAO can be introduced to unlock the privilege.
- Renouncing the contract ownership, and privileged roles.
- Remove functions with elevated centralization risk.

Understand the project's initial asset distribution. Assets in the liquidity pair should be locked. Assets outside the liquidity pair should be locked with a release schedule.

AUTOMATED ANALYSIS

Symbol	Definition
🛑	Function modifies state
💸	Function is payable
🔒	Function is internal
🔐	Function is private
!	Function is important

IERC20	Interface			
└	totalSupply	External !		NO!
└	balanceOf	External !		NO!
└	transfer	External !	🛑	NO!
└	allowance	External !		NO!
└	approve	External !	🛑	NO!
└	transferFrom	External !	🛑	NO!
StorageSlotUpgradeable	Library			
└	getAddressSlot	Internal 🔒		
└	getBooleanSlot	Internal 🔒		
└	getBytes32Slot	Internal 🔒		
└	getUint256Slot	Internal 🔒		
└	getStringSlot	Internal 🔒		
└	getStringSlot	Internal 🔒		
└	getBytesSlot	Internal 🔒		
└	getBytesSlot	Internal 🔒		
IERC1967Upgradeable	Interface			
IBeaconUpgradeable	Interface			

└	implementation	External ❗		NO❗
IERC1822ProxiableUpgradeable	Interface			
└	proxiableUUID	External ❗		NO❗
AddressUpgradeable	Library			
└	isContract	Internal 🔒		
└	sendValue	Internal 🔒	🛑	
└	functionCall	Internal 🔒	🛑	
└	functionCall	Internal 🔒	🛑	
└	functionCallWithValue	Internal 🔒	🛑	
└	functionCallWithValue	Internal 🔒	🛑	
└	functionStaticCall	Internal 🔒		
└	functionStaticCall	Internal 🔒		
└	functionDelegateCall	Internal 🔒	🛑	
└	functionDelegateCall	Internal 🔒	🛑	
└	verifyCallResultFromTarget	Internal 🔒		
└	verifyCallResult	Internal 🔒		
└	_revert	Private 🔐		
Initializable	Implementation			
└	_disableInitializers	Internal 🔒	🛑	
└	_getInitializedVersion	Internal 🔒		
└	_isInitializing	Internal 🔒		
ERC1967UpgradeUpgradeable	Implementation	Initializable, IERC1967Upgradeable		
└	__ERC1967Upgrade_init	Internal 🔒	🛑	onlyInitializing
└	__ERC1967Upgrade_init_unchained	Internal 🔒	🛑	onlyInitializing
└	_getImplementation	Internal 🔒		
└	_setImplementation	Private 🔐	🛑	
└	_upgradeTo	Internal 🔒	🛑	
└	_upgradeToAndCall	Internal 🔒	🛑	

| └ | _upgradeToAndCallUUPS | Internal 🔒 | 🛑 | |

| └ | _getAdmin | Internal 🔒 | | |

| └ | _setAdmin | Private 🔐 | 🛑 | |

| └ | _changeAdmin | Internal 🔒 | 🛑 | |

| └ | _getBeacon | Internal 🔒 | | |

| └ | _setBeacon | Private 🔐 | 🛑 | |

| └ | _upgradeBeaconToAndCall | Internal 🔒 | 🛑 | |

||||||

| **UUPSUpgradeable** | Implementation | Initializable, IERC1822ProxiableUpgradeable, ERC1967UpgradeUpgradeable |||

| └ | __UUPSUpgradeable_init | Internal 🔒 | 🛑 | onlyInitializing |

| └ | __UUPSUpgradeable_init_unchained | Internal 🔒 | 🛑 | onlyInitializing |

| └ | proxiableUUID | External ❗ | | notDelegated |

| └ | upgradeTo | Public ❗ | 🛑 | onlyProxy |

| └ | upgradeToAndCall | Public ❗ | 💵 | onlyProxy |

| └ | _authorizeUpgrade | Internal 🔒 | 🛑 | |

||||||

| **ContextUpgradeable** | Implementation | Initializable |||

| └ | __Context_init | Internal 🔒 | 🛑 | onlyInitializing |

| └ | __Context_init_unchained | Internal 🔒 | 🛑 | onlyInitializing |

| └ | _msgSender | Internal 🔒 | | |

| └ | _msgData | Internal 🔒 | | |

| └ | _contextSuffixLength | Internal 🔒 | | |

||||||

| **OwnableUpgradeable** | Implementation | Initializable, ContextUpgradeable |||

| └ | __Ownable_init | Internal 🔒 | 🛑 | onlyInitializing |

| └ | __Ownable_init_unchained | Internal 🔒 | 🛑 | onlyInitializing |

| └ | owner | Public ❗ | |NO❗ |

| └ | _checkOwner | Internal 🔒 | | |

| └ | renounceOwnership | Public ❗ | 🛑 | onlyOwner |

| └ | transferOwnership | Public ❗ | 🛑 | onlyOwner |

| └ | _transferOwnership | Internal 🔒 | 🛑 | |

||||||

| **IERC20Upgradeable** | Interface | |||

| └ | totalSupply | External ❗ | | NO❗ |

| └ | balanceOf | External ❗ | | NO❗ |

| └ | transfer | External ❗ | 🛑 | NO❗ |

| └ | allowance | External ❗ | | NO❗ |

| └ | approve | External ❗ | 🛑 | NO❗ |

| └ | transferFrom | External ❗ | 🛑 | NO❗ |

||||||

| **IERC20MetadataUpgradeable** | Interface | IERC20Upgradeable |||

| └ | name | External ❗ | | NO❗ |

| └ | symbol | External ❗ | | NO❗ |

| └ | decimals | External ❗ | | NO❗ |

||||||

| **ERC20Upgradeable** | Implementation | Initializable, ContextUpgradeable, IERC20Upgradeable, IERC20MetadataUpgradeable |||

| └ | __ERC20_init | Internal 🔒 | 🛑 | onlyInitializing |

| └ | __ERC20_init_unchained | Internal 🔒 | 🛑 | onlyInitializing |

| └ | name | Public ❗ | | NO❗ |

| └ | symbol | Public ❗ | | NO❗ |

| └ | decimals | Public ❗ | | NO❗ |

| └ | totalSupply | Public ❗ | | NO❗ |

| └ | balanceOf | Public ❗ | | NO❗ |

| └ | transfer | Public ❗ | 🛑 | NO❗ |

| └ | allowance | Public ❗ | | NO❗ |

| └ | approve | Public ❗ | 🛑 | NO❗ |

| └ | transferFrom | Public ❗ | 🛑 | NO❗ |

| └ | increaseAllowance | Public ❗ | 🛑 | NO❗ |

| └ | decreaseAllowance | Public ❗ | 🛑 | NO❗ |

| └ | _transfer | Internal 🔒 | 🛑 | |

| └ | _mint | Internal 🔒 | 🛑 | |

| └ | _burn | Internal 🔒 | 🛑 | |

```
| └ | _approve | Internal 🔒 | 🛑  | |
| └ | _spendAllowance | Internal 🔒 | 🛑  | |
| └ | _beforeTokenTransfer | Internal 🔒 | 🛑  | |
| └ | _afterTokenTransfer | Internal 🔒 | 🛑  | |
||||||
| **iFactory** | Interface |  |||
| └ | createPair | External ❗️ | 🛑  |NO❗️ |
||||||
| **iRouter** | Interface |  |||
| └ | WETH | External ❗️ |   |NO❗️ |
| └ | factory | External ❗️ |   |NO❗️ |
| └ | swapExactTokensForETHSupportingFeeOnTransferTokens | External ❗️ | 🛑  |NO❗️ |
||||||
| **iRwdDistrib** | Interface |  |||
| └ | setShare | External ❗️ | 🛑  |NO❗️ |
| └ | process | External ❗️ | 🛑  |NO❗️ |
||||||
| **TipInu_Token** | Implementation | ERC20Upgradeable, OwnableUpgradeable, UUPSUpgradeable |||
| └ | <Constructor> | Public ❗️ | 🛑  |NO❗️ |
| └ | initialize | Public ❗️ | 🛑  | initializer |
| └ | <Receive Ether> | External ❗️ |  💵 |NO❗️ |
| └ | _authorizeUpgrade | Internal 🔒 | 🛑  | onlyOwner |
| └ | _transfer | Internal 🔒 | 🛑  | |
| └ | shouldTakeFee | Internal 🔒 |   | |
| └ | takeFee | Internal 🔒 | 🛑  | |
| └ | shouldSwapBack | Internal 🔒 |   | |
| └ | getSwapThreshold | Internal 🔒 |   | |
| └ | swapBack | Internal 🔒 | 🛑  | |
| └ | clearStuckBNB | External ❗️ | 🛑  | onlyOwner |
| └ | clearStuckTokens | External ❗️ | 🛑  | onlyOwner |
| └ | freezeContract | External ❗️ | 🛑  | onlyOwner |
```

| └ | setIsFreezeExempt | External ❗ | 🛑 | onlyOwner |

| └ | setIsFeeExempt | External ❗ | 🛑 | onlyOwner |

| └ | setIsProcessExempt | External ❗ | 🛑 | onlyOwner |

| └ | setIsRewardExempt | External ❗ | 🛑 | onlyOwner |

| └ | setIsBlacklisted | External ❗ | 🛑 | onlyOwner |

| └ | addPair | External ❗ | 🛑 | onlyOwner |

| └ | removeLastPair | External ❗ | 🛑 | onlyOwner |

| └ | setOpsFee | External ❗ | 🛑 | onlyOwner |

| └ | setRwdFee | External ❗ | 🛑 | onlyOwner |

| └ | setfeeReceiver | External ❗ | 🛑 | onlyOwner |

| └ | setSwapEnabled | External ❗ | 🛑 | onlyOwner |

| └ | setSwapModifier | External ❗ | 🛑 | onlyOwner |

| └ | setManualThreshold | External ❗ | 🛑 | onlyOwner |

| └ | setRewardDistrib | External ❗ | 🛑 | onlyOwner |

| └ | setStakingContract | External ❗ | 🛑 | onlyOwner |

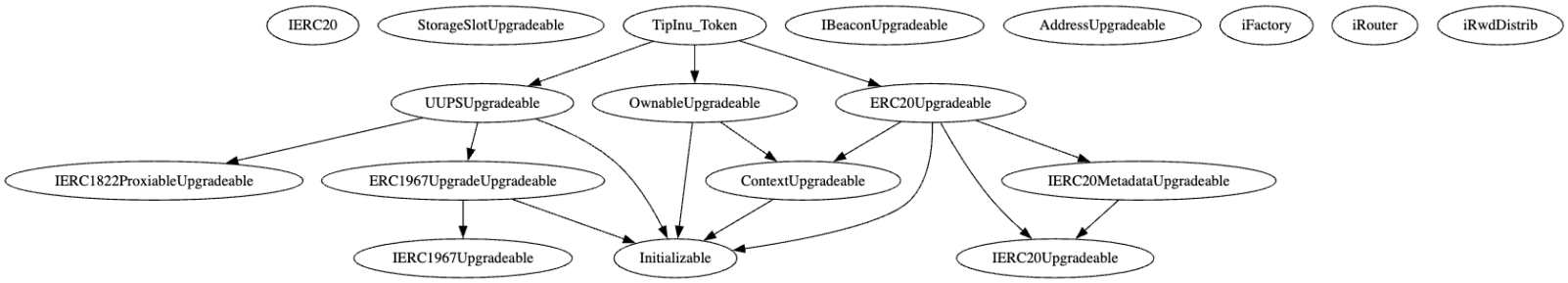
| └ | setStakingAmount | External ❗ | 🛑 | NO❗ |

| └ | isLPPair | Internal 🔒 | | |

| └ | getCirculatingSupply | Public ❗ | | NO❗ |

| └ | getUserUnstaked | External ❗ | | NO❗ |

INHERITANCE GRAPH



MANUAL REVIEW

Identifier	Definition	Severity
CEN-01	Centralized privileges	Major 🟠
CEN-03	Privileged role can blacklist accounts and contracts	
CEN-05	Privileged role can freeze contract operations	
CEN-06	Privileged role can remove LP pair	

Important `onlyOwner` centralized privileges are listed below:

```
renounceOwnership()
transferOwnership()
_authorizeUpgrade()
clearStuckBNB()
clearStuckTokens()
freezeContract()
setIsFreezeExempt()
setIsFeeExempt()
setIsProcessExempt()
setIsRewardExempt()
setIsBlacklisted()
addPair()
removeLastPair()
setOpsFee()
setRwdFee()
setfeeReceiver()
setSwapEnabled()
setSwapModifier()
setManualThreshold()
setRewardDistrib()
setStakingContract()
```

`stakingContract` can access `setStakingAmount()` function.

RECOMMENDATION

Deployers', owners', administrators', and all other privileged roles' private-keys/access-keys/admin-keys should be secured carefully. These entities can have a single point of failure that compromises the security of the project. Manage centralized and privileged roles carefully. It is recommended to:

Implement multi-signature wallets: Require multiple signatures from different parties to execute certain sensitive functions within contracts. This spreads control and reduces the risk of a single party having complete authority.

Use a decentralized governance model: Implement a governance model that enables token holders or other stakeholders to participate in decision-making processes. This can include voting on contract upgrades, parameter changes, or any other critical decisions that impact the contract's functioning.

ACKNOWLEDGEMENT

TipInu acknowledged to secure deployer and contract owners' private keys carefully. TipInu acknowledged to use multi-signature validation approach to manage centralization roles whenever possible.

Identifier	Definition	Severity
CEN-02	Initial asset distribution	Minor

All of the initially minted assets are sent to the project owner when deploying the contract. This can be an issue as the project owner can distribute tokens without consulting the community.

```
uint256 contractSupply = 420_000_000 * (10 ** 18);
_mint(owner(), contractSupply);
```


RECOMMENDATION

Project must communicate with stakeholders and obtain the community consensus while distributing assets.

ACKNOWLEDGEMENT

TipInu project will distribute tokens after acquiring broader consensus, as per their pre-determined tokenomics.

Identifier	Definition	Severity
CEN-09	Use of proxy and upgradeable contracts	Major 🟠

Privileged role can initiate contract implementation. Contract upgradeability allows privileged roles to change current contract implementation.

```
contract TipInu_Token is ERC20Upgradeable, OwnableUpgradeable, UUPSUpgradeable {
```

TipInu team has added `_disableInitializers` in upgradeable implementation to add a safety measure that prevents initializer functions from being called more than once, reducing the risk of unintended behavior or vulnerabilities.

```
_authorizeUpgrade()
```


RECOMMENDATION

Test and validate current contract thoroughly before deployment. While proxy contracts are great for robust deployments while maintaining the upgradeable flexibility, proxy codes are prone to new security or logical issues that may compromise the project.

ACKNOWLEDGEMENT

TipInu team argued that contract uses proxy mechanism to have future contract upgradeability, and contract flexibility.

Identifier	Definition	Severity
LOG-01	Lack of appropriate input validation	Minor

Below mentioned functions are set without adequate input validation:

`clearStuckTokens()`
`setManualThreshold()`
`setStakingAmount()`

RECOMMENDATION

Validate input to make sure `manualThreshold` is above pre-determined limit. Contract owner should not be able to remove native token from smart contract.

Identifier	Definition	Severity
LOG-02	Potential front-running	Minor

Potential front-running also classified as – sandwich attack happens when an attacker observes a transaction swapping tokens or adding liquidity without setting restrictions on slippage or minimum output amount. The attacker can manipulate the exchange rate by front-running a transaction to purchase assets and make profits by back-running a transaction to sell assets. Below mentioned function is called without setting restrictions on slippage or minimum output:

`swapExactTokensForETHSupportingFeeOnTransferTokens()`

RECOMMENDATION

This function should be provided reasonable minimum output amounts, instead of zero.

ACKNOWLEDGEMENT

TipInu project argued that front-running is unavoidable on EVM blockchains. Features like transaction tax, should lower front-running profitability and viability.

Identifier	Definition	Severity
LOG-03	Re-entrancy	Unknown

Below mentioned function is used without re-entrancy guard:

`swapBack()`

RECOMMENDATION

Use Checks Effects Interactions pattern when handing over the flow to an external entity and guard functions against re-entrancy attacks.

ACKNOWLEDGEMENT

`swapBack()` function makes external call to router contract. Router contract is considered secured, and well-audited.

Identifier	Definition	Severity
COD-02	Timestamp manipulation via `block.timestamp`	Minor

Be aware that the timestamp of the block can be manipulated by a miner. When the contract uses the timestamp to seed a random number, the miner can actually post a timestamp within 15 seconds of the block being validated, effectively allowing the miner to precompute an option more favorable to their chances.

RECOMMENDATION

To maintain block integrity, follow 15 seconds rule, and scale time dependent events accordingly.

RESOLUTION

TipInu team commented that timestamp of the block is not used to generate random numbers. Miner manipulation should be minimal.

Identifier	Definition	Severity
COD-03	Note regarding swap threshold	Minor

Dynamic calculation of `swapThreshold` based on transaction amounts may lead to unpredictable behavior. `manualThreshold` and conditions in `shouldSwapBack` that rely on contract balance checks may potentially be manipulated by users to trigger or prevent swaps.

RECOMMENDATION

Ensure that `swapBack()` function cannot be manipulated in highly volatile conditions.

Identifier	Definition	Severity
COD-05	Missing zero address validation	Minor

Below mentioned functions are missing zero address input validation:

`setIsBlacklisted()`
`addPair()`
`setfeeReceiver()`
`setRewardDistrib()`
`setStakingContract()`

RECOMMENDATION

Validate if the input address is `dead(0)` or not.

Identifier	Definition	Severity
COD-06	Unknown externally owned account	Minor

An externally owned account (EOA) has no code, and one can send messages from an externally owned account by creating and signing a transaction.

```
feeReceiver = 0x5372a34918b7698e16F5bDeBB7e2D0f9dF5c8E95;
```


RECOMMENDATION

Private keys of externally owned accounts must be secured carefully.

Identifier	Definition	Severity
COD-10	Direct and indirect dependencies	Unknown
COD-11	Reliance on external, router, staking, and reward contracts	

Smart contract is interacting with third party protocols e.g., DEX Routers, External Staking Contract, Reward Contract, Web 3 Applications, Open Zeppelin tools. The scope of the audit treats these entities as black boxes and assumes their functional correctness. However, in the real world, all of them can be compromised, and exploited. Moreover, upgrades in these entities can create severe impacts, e.g., increased transactional fees, deprecation of previous routers, etc.

RECOMMENDATION

Inspect third party dependencies regularly, and mitigate severe impacts whenever necessary.

ACKNOWLEDGEMENT

TipInu team will inspect all internal and external dependencies regularly, and push updates with `_authorizeUpgrade()` when required.

Identifier	Definition	Severity
COD-12	Lack of event-driven architecture	Minor

Smart contract uses function calls to update state, which can make it difficult to track and analyze changes to the contract over time.

RECOMMENDATION

Use events to track state changes. Events improve transparency and provide a more granular view of contract activity.

Identifier	Definition	Severity
COM-03	Hardcoded gas amount	Minor

Gas amount is set to:

```
rwdDistribGas = 500000;
```

Hardcoding a gas limit means that if the actual gas required for the `rwdDistrib.process()` function changes due to contract upgrades or network conditions, hardcoded value might not be sufficient or may be excessively high, leading to failed transactions or unnecessary expenditure of gas.

RECOMMENDATION

Use flexible gas limits.

Identifier	Definition	Severity
VOL-01	Use of `delegatecall`	Minor 🟢

`delegatecall` is present in the smart contract.

RECOMMENDATION

Verify the user input and do not allow contract to perform `delegatecall` calls to untrusted contracts. Use of `delegatecall` in the contract is not recommended, as managing the storage layout in multiple contracts during logic update can be disruptive.

RESOLUTION

TipInu team has commented that – `delegatecall` is only used to facilitate proxy and upgradeable libraries.

Identifier	Definition	Severity
VOL-02	Assembly code	Minor

Inline assembly is a way to access the Ethereum Virtual Machine (EVM) at low level. This bypasses several important safety features and checks of Solidity. Moreover, automated and manual checks are not confidently possible for inline assembly codes.

RECOMMENDATION

Use high level Solidity constructs instead of `assembly`.

RESOLUTION

TipInu team has commented that – main assembly code is used for gas savings in byte manipulation and was written by *Consensys*, and is considered safe.

DISCLAIMERS

InterFi Network provides the easy-to-understand audit of solidity source codes (commonly known as smart contracts).

The smart contract for this particular audit was analyzed for common contract vulnerabilities, and centralization exploits. This audit report makes no statements or warranties on the security of the code. This audit report does not provide any warranty or guarantee regarding the absolute bug-free nature of the smart contract analyzed, nor do they provide any indication of the client's business, business model or legal compliance. This audit report does not extend to the compiler layer, any other areas beyond the programming language, or other programming aspects that could present security risks. Cryptographic tokens are emergent technologies, they carry high levels of technical risks and uncertainty. You agree that your access and/or use, including but not limited to any services, reports, and materials, will be at your sole risk on an as-is, where-is, and as-available basis. This audit report could include false positives, false negatives, and other unpredictable results.

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InterFi Network provides intelligent blockchain solutions. We provide solidity development, testing, and auditing services. We have developed 150+ solidity codes, audited 1000+ smart contracts, and analyzed 500,000+ code lines. We have worked on major public blockchains e.g., Ethereum, Binance, Cronos, Doge, Polygon, Avalanche, Metis, Fantom, Bitcoin Cash, Velas, Oasis, etc.

InterFi Network is built by engineers, developers, UI experts, and blockchain enthusiasts. Our team currently consists of 4 core members, and 6+ casual contributors.

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RELENTLESSLY SECURING PUBLIC AND PRIVATE BLOCKCHAINS