

SMART CONTRACT AUDIT

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PREPARED FOR

REXAS FINANCE



INTRODUCTION

Auditing Firm	InterFi Network
Client Firm	Rexas Finance
Methodology	Automated Analysis, Manual Code Review
Language	Solidity
Contract	0x9eAeBd7E73D97E78c77fAB743e6FFA1b550e224c
Blockchain	Ethereum Chain
Centralization	Active Ownership
Commit AUDIT REPORT CONFI	30e10a004c3303527172fdd4473d4f356c628cd9
Website	https://rexas.com/
Telegram	https://t.me/rexasfinance/
X (Twitter)	https://x.com/rexasfinance/
Report Date	September 09, 2024

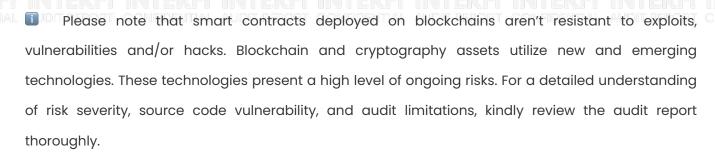
I Verify the authenticity of this report on our website: https://www.github.com/interfinetwork



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	1	5	0
Acknowledged	0	1	0	2	1
Resolved	0	0	0	1	0
Noteworthy Privileges removeStuckEth(), removeStuckToken(), enableTrading(), set			etWhitelist()		



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 Rexas Finance 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:

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

Public Contract Link			
https://etherscan.io/addres	/0x9eAeBd7E73D97E78c77fAB743e6FFA1b550e224c#code		
Contract Name	REXAS_FINANCE TERFLINTERFLINTERF		
Compiler Version	0.8.26		
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:

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



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

REPORT

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

PUBLISH

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

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:

Risk Type	Definition
	These risks pose immediate and severe threats, such as asset theft, data
Critical	manipulation, or complete loss of contract functionality. They are often easy to
	exploit and can lead to significant, irreparable damage. Immediate fix is required.
	These risks can significantly impact code performance and security, and they may
Major 🛑	indirectly lead to asset theft and data loss. They can allow unauthorized access or
	manipulation of sensitive functions if exploited. Fixing these risks are important.
	These risks may create attack vectors under certain conditions. They may enable
Medium •	minor unauthorized actions or lead to inefficiencies that can be exploited indirectly to escalate privileges or impact functionality over time.
Minor	These risks may include inefficiencies, lack of optimizations, code-style violations.
	These should be addressed to enhance overall code quality and maintainability.
Halmanna 🗬	These risks pose uncertain severity to the contract or those who interact with it.
Unknown •	Immediate fix is required to mitigate risk uncertainty.

All statuses which are identified in the audit report are categorized here:

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:

- o 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.

- o The client can lower centralization-related risks by implementing below mentioned practices:
- o 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.
- o 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
es a	Function is payable
	Function is internal
	Function is private
Ţ	Function is important

| **IERC20** | Interface | |||

|||||

| **IDexFactory** | Interface | |||

| **IDexRouter** | Interface | |||
| L | factory | External ! | |NO! |

| ^L | WETH | External ! | |NO! |

| ^L | addLiquidityETH | External ! | 🔤 |NO ! |

| L | swapExactTokensForETHSupportingFeeOnTransferTokens | External ! | ● |NO! |

 $\prod \prod \prod$

| **Context** | Implementation | |||





```
| <sup>L</sup> | _msgData | Internal 🔒 |   | |
111111
| **Ownable** | Implementation | Context |||
| └ | <Constructor> | Public ! | ● |NO! |
| <sup>L</sup> | owner | Public ! |
                        |N0 ! |
| └ | renounceOwnership | Public ! | ● | onlyOwner |
| L | transferOwnership | Public ! | Gentlement | onlyOwner |
| **REXAS FINANCE** | Implementation | Context, IERC20, Ownable | | |
| L | <Constructor> | Public ! | • | NO! |
| L | <Receive Ether> | External ! | 🙉 |NO! |
| L | name | Public ! | NO! |
| L | symbol | Public ! | NO! |
| L | decimals | Public ! | NO! |
| L | totalSupply | Public ! | NO! |
| L | balanceOf | Public ! | NO! |
| L | transfer | Public ! | • |NO! |
| L | allowance | Public ! | NO! |
| L | approve | Public ! | • |NO! |
| L | transferFrom | Public ! | 📦 |NO! |
| L | increaseAllowance | Public ! | • | NO! |
| L | decreaseAllowance | Public ! | • | NO! |
| L | removeStuckEth | Public ! | 🛑 | onlyOwner |
| L | removeStuckToken | Public ! | • | onlyOwner |
| └ | enableTrading | External ! | ● | onlyOwner |
| L | setWhitelist | External ! | 🔴 | onlyOwner |
| └ | _approve | Private 🔐 | 🛑 | |
```



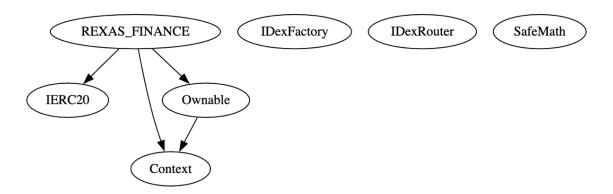
```
| L | _transfer | Private 🔐 | 🔴 | |
| **SafeMath** | Library | |||
| <sup>L</sup> | add | Internal 🔒 |
                                    II
| <sup>L</sup> | sub | Internal <sup>@</sup> |
                                   | \cdot |
| <sup>L</sup> | sub | Internal 🗎 |
                                   | <sup>L</sup> | mul | Internal 🔒 |
                                    | |
| <sup>L</sup> | div | Internal 🗎 |
                                    | |
| <sup>L</sup> | div | Internal 🔒 |
                                    | \cdot |
| <sup>L</sup> | mod | Internal 🔒 |
                                    | <sup>L</sup> | mod | Internal 🔒 |
                                    | |
```







INHERITANCE GRAPH







MANUAL REVIEW

Identifier	Definition	Severity
CEN-01	Centralized privileges	
CEN-01-03	Privileged role must enable trading to allow token transfer	Major 🔵
CEN-01-04	Privileged role can withdraw tokens from smart contract	

Important only0wner centralized privileges are listed below:

renounceOwnership()
transferOwnership()
removeStuckEth()
removeStuckToken()
enableTrading()
setWhitelist()



INTE

RECOMMENDATION

Securing private keys or access credentials of deployers, contract owners, operators, and other roles with privileged access is crucial to prevent single points of failure that can compromise contract security.

Use of multi-signature wallets is recommended – These wallets require multiple authorizations to execute sensitive contract functions, reducing the risk associated with single-party control.

Use of decentralized governance model is recommended – This model allows token holders and stakeholders to actively participate in decision-making, such as contract upgrades and parameter adjustments, enhancing overall security and resilience.

ACKNOWLEDGEMENT

Rexas Finance team argued that centralized and controlled privileges are used as required.



Identifier	Definition	Severity
CEN-02	Initial token allocation	Minor •

Upon deployment, all initially minted tokens are transferred to the contract deployer. It could be an issue as the deployer can distribute tokens without consulting the community.

```
uint256 private _totalSupply = 1_000_000_000 * 1e18;
   _balances[owner()] = _totalSupply;
emit Transfer(address(0), owner(), _totalSupply);
```

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RECOMMENDATION

Establish transparent tokenomics model that involves community input in the decision-making process regarding token allocation.

ACKNOWLEDGEMENT

Rexas Finance team has clarified that initial token allocation will adhere strictly to pre-determined tokenomics outlined in project documentation.



Identifier	Definition	Severity
LOG-01	Insufficient input boundaries	Minor •

Below mentioned function is set without sufficient input boundaries:

removeStuckToken()



RECOMMENDATION

Establish clear input check. Native tokens should not be removable by contract owner.



Identifier	Definition	Severity
LOG-02	Potential front-running	Minor •

Potential front-running 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 functions are called without setting restrictions on slippage or minimum output:

addLiquidityETH()
swapExactTokensForETHSupportingFeeOnTransferTokens()

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RECOMMENDATION

Functions that execute critical state changes should enforce minimum output thresholds. Setting these minimums above zero can deter malicious actors by reducing the predictability and profitability of front-running strategies.

Implement commit-reveal schemes or transaction ordering to protect against front-running.

ACKNOWLEDGEMENT

Front-running is not avoidable on public blockchains. Rexas Finance team commented that, most EVM chains are prone to some sort of front-running and external manipulation.



Identifier	Definition	Severity
COD-02	Timestamp dependence	Minor •

Be aware that the timestamp of the block can be manipulated by miners. Since miners can slightly adjust the timestamp, they may influence contract outcomes to their advantage.

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RECOMMENDATION

Avoid relying solely on timestamp of the block for critical contract functions. Follow 15 seconds rule, and scale time dependent events accordingly.



Identifier	Definition	Severity
COD-04	Missing or inaccurate error messages	Minor •

Below mentioned functions have missing or inaccurate error messages:

div()

mod()



RECOMMENDATION

Provide accurate information strings for require related errors.



Identifier	Definition
COD-09	Lack of contract balance withdraw

Smart contract may collect tokens, and ethers from external addresses. Some swap, and liquidity-add events may accumulate residual ethers, and tokens. Add withdraw() function to take out tokens and ethers from the contract.





Identifier	Definition	Severity
COD-10	Direct and indirect dependencies	Unknown 🗨

Smart contract is interacting with third party protocols e.g., DEX routers, external contracts, web3 applications, *OpenZeppelin* upgradeable and ERC20 libraries. 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.

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RECOMMENDATION

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

ACKNOWLEDGEMENT

Rexas Finance team will inspect third party dependencies regularly, and push upgrades whenever 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.

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RECOMMENDATION

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



Identifier	Definition	Severity	
VOL-01	Irrelevant code	Medium 🥌	

Redundant code found in:

library SafeMath {



RECOMMENDATION

Remove redundant and dead code.



Identifier	Definition	Severity
COM-01	Floating pragma	Minor •

Compiler is set to ^0.8.20





RECOMMENDATION

Pragma should be fixed to stable compiler version.

RESOLUTION

Smart contract is deployed with stable compiler.



Identifier	Definition	Severity
COM-04	Gas optimization	Minor •

Repeated calls to state variables like owner() in loops or multiple function calls can increase gas costs.

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RECOMMENDATION

Optimize functions, arrays, and loops identified as high gas consumers by simplifying logic, minimizing state changes, and limiting loop iterations where possible.



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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ABOUT INTERFI NETWORK

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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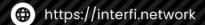
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