Security Assessment

LENNY TOKEN

Verified On Jan 10th, 2023

PREPARED FOR:

LENNY TOKEN

TABLE OF CONTENTS

Document Properties

Client	Lenny Token
Title	Smart Contract Audit Report
Target	Lenny Token
Version	1.0
Author	Akhmetshin Marat
Auditors	Akhmetshin Marat, James BK
Reviewed by	Dima Meru
Approved by	Prince Mitchell
Classification	Public

Version Info

Version	Date	Author(s)	Description
1.0	January 10, 2024	James BK	Final Release
1.0-AP	January 10, 2024	James BK	Release Candidate

Contact

For more information about this document and its contents, please contact Vital Block Security Inc.

Name	Akhmetshin Marat
Phone	+44 7944 248057
Email	info@vitalblock.org

In the following, we show the specific pull request and the commit hash value used in this audit.

- https://github.com/vinhtranz/cremation-coin/tree/main/contracts/lenny_token (LN6P590)
- https://github.com/vinhtranz/cremation-coin/blob/main/contracts/lenny_token/Cargo.toml (78YY778)

About Vital Block Security

Vital Block Security provides professional, thorough, fast, and easy-to-understand smart contract security audit. We do in-depth and penetrative static, manual, automated, and intelligent analysis of the smart contract. Some of our automated scans include tools like ConsenSys MythX, Mythril, Slither, Surya. We can audit custom smart contracts, DApps, Rust, NFTs, etc (including the service of smart contract auditing). We are reachable at Telegram (https://t.me/vital_block), Twitter (http://twitter.com/Vb_Audit), or Email (info@vitalblock.org).

Table 1.2: Vulnerability Severity Classification

Impact \ Likelihood	*High*	*Medium*	*Low*
High	Critical	High	Medium
Med	High	Medium	Low
Low	Medium	Low	Low

Methodology (1)

To standardize the evaluation, we define the following terminology based on the OWASP Risk Rating Methodology [4]:

- Likelihood represents how likely a particular vulnerability is to be uncovered and exploited in the wild;
- Impact measures the technical loss and business damage of a successful attack;
- Severity demonstrates the overall criticality of the risk.

SCOPE OF WORK

Vital Block was consulted by LENNY TOKEN to conduct the smart contract audit of its Rust source code. The audit scope of work is strictly limited to mentioned .Rust file only:

- **LENNYTOKEN**

ℹ️ **External contracts and/or interfaces dependencies are not checked due to being out of scope.**

Verify audited contract code Repo.

Public Contract Link
https://github.com/vinhtranz/cremation-coin/blob/main/contracts/lenny_token/Cargo.toml
https://github.com/vinhtranz/cremation-coin/blob/main/contracts/lenny_token/src/testing.rs
https://github.com/vinhtranz/cremation-coin/blob/main/contracts/lenny_token/src/state.rs
https://github.com/vinhtranz/cremation-coin/blob/main/contracts/lenny_token/src/msg.rs
https://github.com/vinhtranz/cremation-coin/blob/main/contracts/lenny_token/src/lib.rs
https://github.com/vinhtranz/cremation-coin/blob/main/contracts/lenny_token/src/contract.rs
https://github.com/vinhtranz/cremation-coin/blob/main/contracts/lenny_token/src/bin/schema.rs

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 Vital Block Security 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 the 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.**

Table 1.0 The Full Audit Checklist

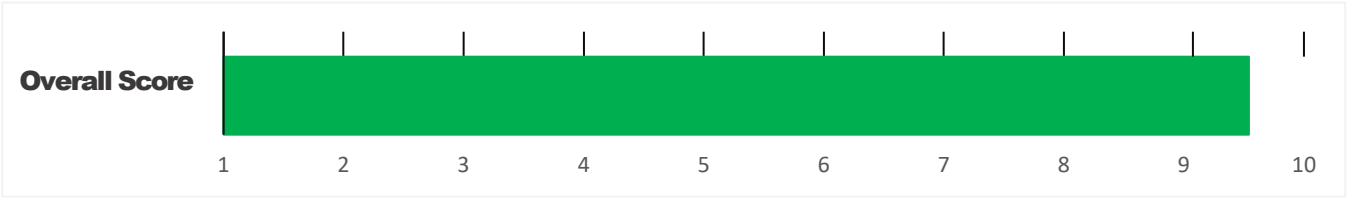
Category	Checklist Items
Basic Coding Bugs	Constructor Mismatch
	Ownership Takeover
	Redundant Fallback Function
	Overflows & Underflows
	Reentrancy
	Money-Giving Bug
	Blackhole
	Unauthorized Self-Destruct
	Revert DoS
	Unchecked External Call
	Gasless Send
	Send Instead Of Transfer
	Costly Loop
	(Unsafe) Use Of Untrusted Libraries
	(Unsafe) Use Of Predictable Variables
	Transaction Ordering Dependence
	Deprecated Uses
Semantic Consistency Checks	Semantic Consistency Checks
Advanced DeFi Scrutiny	Business Logics Review
	Functionality Checks
	Authentication Management
	Access Control & Authorization
	Oracle Security
	Digital Asset Escrow
	Kill-Switch Mechanism
	Operation Trails & Event Generation
	ERC20 Idiosyncrasies Handling
	Frontend-Contract Integration
	Deployment Consistency
	Holistic Risk Management
Additional Recommendations	Avoiding Use of Variadic Byte Array
	Using Fixed Compiler Version
	Making Visibility Level Explicit
	Making Type Inference Explicit
	Adhering To Function Declaration Strictly
	Following Other Best Practices

EXECUTIVE SUMMARY

Vital Block Security has performed the automated and manual analysis of the LENNY TOKEN Rust code. The code was reviewed for common contract vulnerabilities and centralized exploits. Here's a quick audit summary:

Status	Critical !	Major "	Medium #	Minor $	Unknown %
Open	0	0	0	1	0
Acknowledged	0	0	0	2	0
Resolved	0	0	1	0	3
Noteworty onlyOwner Privileges	Set Taxes and Ratios, Airdrop, Set Protection Settings, Set Reward Properties, Set Reflector Settings, Set Swap Settings, Set Pair and Router				

LENNY TOKEN Smart contract has achieved the following score: 95.0



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.

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

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.**

ℹ️ **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.**

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.

AUDIT SCOPE | LENNY TOKEN

ID	Repo	Comment	File	SHM321 Checksum
LBY	contracts/lenny_token/src /contract.rs	cC512486	Contract.rs	6788099YIRHVSK853PKFMGHEF44309200KDHFCBUGIJN
LBI	contracts/lenny_token/src /contract.rs	cC512486	Contract.rs	347520JHDB7549H22H3BVDIOETYUHF009JBIKBDI33BJ4
LBW	contracts/lenny_token/src /contract.rs	cC512486	Contract.rs	1988Y73HUGFDINN353840NFMTEJER73649RGFIMDIDH
LBG	contracts/lenny_token/src /contract.rs	cC512486	Contract.rs	4438648TEOHBF6378309EHROECNEPOEJDNETE8EYEU3
LBL	contracts/lenny_token/src /contract.rs	cC512486	Contract.rs	66390028765RVNKDBYFTGW553T2KOEHIUUJJIJE
LBA	contracts/lenny_token/src /contract.rs	cC512486	Contract.rs	09825539BDYG543DVNKOMIKEBYRJUFHHFHJFIE333222
LBJ	contracts/lenny_token/src /contract.rs	cC512486	Contract.rs	8654RJVT3DWI865YK26437903JJDGGDHGWY6E
LBE	contracts/lenny_token/src /testing.rs	cC512486	testing.rs	7763888636TGYGFFTFHBETT66TFTCTVYBHBYT
LBP	contracts/lenny_token/src /testing.rs	cC512486	testing.rs	88530486494YRHFTEICBGEIEGWTWYWUHEJEHEIE33U3
LBM	contracts/lenny_token/src /testing.rs	cC512486	testing.rs	1209873KHJLKJNFJHGE98763990029774BCUHHDUU239
LBV	contracts/lenny_token/src /testing.rs	cC512486	testing.rs	23456UGFYUHE98756EFHJHE7654ESDFGHGERTYUJ3897
LBQ	contracts/lenny_token/src /state.rs	cC512486	state.rs	37889UHBIONEO7TYRDFGVBN5678939IJWSFVDYUHDCI
LBS	contracts/lenny_token/src /state.rs	cC512486	state.rs	678903098TFHJKFCPOIUGFGHJKE9865ERGBEIVBHE8767
LBR	contracts/lenny_token/src /state.rs	cC512480	state.rs	98765SDFGBNFCOI56789UIYHGGHEJDIUYTRDCVBN3459
LCD	contracts/lenny_token/src /lib.rs	cC512481	lib.rs	3348y9808hgtrusvnmu43100ejfojgfnut8496230hb574he
LHU	contracts/lenny_token/src /lib.rs	cC512481	lib.rs	9864byf5f379eig28ffre64085jv1613251guhkdmue87
LGG	contracts/lenny_token/src /msg.rs	cC512481	msg.rs	7ej2d8jg765tjfiowg538ij74dwftyv6478ij3gs820
LTR	contracts/lenny_token/src /msg.rs	cC512481	msg.rs	864fr46de438hdguw903rfdcb246dbuhb2917enk

AUTOMATED ANALYSIS

Symbol	Definition
	Function modifies state
	Function is payable
	**Function is internal**
	**Function is private**
	Function is important

LENNY TOKEN	Interface			
└	totalSupply	External	!	NO
└	decimals	External	!	NO
└	symbol	External	!	NO
└	name	External	!	NO
└	getOwner	External		NO
└	balanceOf	External	!	NO
└	transfer	External	!	NO
└	allowance	External	!	NO
└	approve	External	!	NO
└	transferFrom	External		NO

IFactoryV2	Interface			
└	getPair	External		NO
└	createPair	External		NO

IV2Pair	Interface			
└	factory	External		NO
└	getReserves	External		NO
└	sync	External		NO

IRouter01	Interface				
└	factory	External			NO
└	dex	External			NO
└	addLiquiditydex	External		#	NO
└	addLiquidity	External	"		NO
└	swapExactdexForTokens	External		#	NO
└	getAmountsOut	External			NO
└	getAmountsIn	External			NO
IRouter02	Interface	IRouter01			
└	swapExactTokensFordexSupportingFeeOnTransferTokens	External	"		NO
└	swapExactdexForTokensSupportingFeeOnTransferTokens	External		#	NO
└	swapExactTokensForTokensSupportingFeeOnTransferTokens	External	"	!	NO
└	swapExactTokensForTokens	External	"		NO
Protections	Interface				
└	checkUser	External	"	!	NO
└	setLaunch	External	"	!	NO
└	setLpPair	External	"	!	NO
└	CREMAT	External	"		NO
└	removeSniper	External	"		NO
Cashier	Interface				
└	setRewardsProperties	External	"		NO
└	tally	External	"		NO
└	load	External		#	NO
└	cashout	External	"		NO
└	giveMeWelfarePlease	External	"		NO
└	getTotalDistributed	External			NO
└	getUserInfo	External			NO
└	getUserRealizedRewards	External			NO

| └ | getPendingRewards | External ❗ | | NO❗ |

| └ | initialize | External ❗ | " | NO❗ |

| └ | getCurrentReward | External ❗ | | NO❗ |

||||||

| **rs** | Implementation | SafeMath |||

| └ | <Constructor> | Public ❗ | | # | NO❗ |

| └ | transferOwner | External ❗ | " | onlyOwner |

| └ | renounceOwnership | External ❗ | " | NO❗ |

| └ | setOperator | Public ❗ | " | NO❗ |

| └ | renounceOriginalDeployer | External ❗ | " | NO❗ |

| └ | <Receive Ether> | External ❗ | | # | NO❗ |

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

| └ | decimals | External ❗ | | NO❗ |

| └ | symbol | External ❗ | | NO❗ |

| └ | name | External ❗ | | NO❗ |

| └ | getOwner | External ❗ | ❗ | NO❗ |

| └ | balanceOf | Public ❗ | ❗ | NO❗ |

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

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

| └ | _approve | Internal $ | " | | |

| └ | approveContractContingency | Public ❗ | " ❗ 🛑 | onlyOwner |

| └ | transfer | External ❗ | " | NO❗ |

| └ | transferFrom | External ❗ | " | NO❗ |

| └ | setNewRouter | External ❗ | " | onlyOwner |

| └ | setLpPair | External ❗ | " | onlyOwner |

| └ | setInitializers | External ❗ | " | onlyOwner |

| └ | isExcludedFromFees | External ❗ | | NO❗ |

| └ | isExcludedFromDividends | External ❗ | | NO❗ |

| └ | isExcludedFromProtection | External ❗ | | NO❗ |

| └ | setDividendExcluded | Public ❗ | " | onlyOwner |

| └ | setExcludedFromFees | Public ❗ | " | onlyOwner |

OPTIMIZATIONS | LENNY TOKEN

ID	Title	Category	Status
STV	**Logarithm Refinement Optimization**	Gas Optimization	Acknowledged
SOP	**Checks Can Be Performed Earlier**	Gas Optimization	Acknowledged
SDP	**Unnecessary Use Of SafeMath**	Gas Optimization	Acknowledged
SWY	**Struct Optimization**	Gas Optimization	Acknowledged
SGT	**Unused State Variable**	Gas Optimization	Acknowledged

General Detectors

Public Functions Should be Declared External

Some functions in this contract should be declared as external in order to save gas

Attention Required

Missing Zero Address Validation

Some functions in this contract may not appropriately check for zero addresses being used.

Attention Required

Numeric Notation Best Practices

The numeric notation used in this contract is unconventional, possibly worsening the reading/debugging experience

Attention Required

- No compiler version inconsistencies found
- No unchecked call responses found
- No vulnerable self-destruct functions found
- No assertion vulnerabilities found
- No old solidity code found
- No external delegated calls found
- No external call dependency found
- No vulnerable authentication calls found
- No invalid character typos found
- No RTL characters found
- No dead code found
- No risky data allocation found
- No uninitialized state variables found
- No uninitialized storage variables found
- No vulnerable initialization functions found
- No risky data handling found
- No number accuracy bug found
- No out-of-range number vulnerability found
- No map data deletion vulnerabilities found
- No tautologies or contradictions found
- No faulty true/false values found
- No innacurate divisions found
- No redundant constructor calls found
- No vulnerable transfers found
- No vulnerable return values found
- No uninitialized local variables found
- No default function responses found
- No missing arithmetic events found
- No missing access control events found
- No redundant true/false comparisons found
- No state variables vulnerable through function calls found
- No buggy low-level calls found
- No expensive loops found
- No bad numeric notation practices found
- No missing constant declarations found
- No missing external function declarations found
- No vulnerable payable functions found
- No vulnerable message values found

Key Findings

Overall, these contracts are well-designed and engineered, though the implementation can be improved by resolving the identified issues (shown in Table 2.1), 2 medium-severity vulnerabilities, 3 low-severity vulnerabilities, and 2 informational recommen- dations.

Table 2.1: Key Lenny Token Audit Findings

ID	Severity	Title	Category	Status
LNY-001	Informational	updateForMinter , the following equation is used inside an unchecked block	Coding Practice	Fixed
LNY-002	Low	In updateForTokenTax, Relevant Function Snippet	Business Logic	Fixed
LNY-003	Low	updateForAmount, Relevant Function Snippet	Coding Practice	Fixed
LNY-004	Informational	updateForAsset, Relevant Function Snippet	Coding Practice	Fixed
LNY-005	Acknowledge	Proper Asset Price in GenericLogic::calculateUserAccountData()	Business Logic	Fixed
LNY-006	Low	updateForOwner, Relevant Function Snippet	Business Logic	Fixed

Beside the identified issues, we emphasize that for any user-facing applications and services, it is always important to develop necessary risk-control mechanisms and make contingency plans, which may need to be exercised before the mainnet deployment. The risk-control mechanisms should kick in at the very moment when the contracts are being deployed on mainnet. Please refer to page 10 for details.

LNY-01 Key Findings

Category	Severity ●	Location	Status
Status Mathematical Operations	Low	Multiple Contracts	Informational

Description

In **updateForMinter ,** the following equation is used inside an unchecked block

```
};
  let token_info_res: TokenInfoResponse =
      deps.querier.query(&QueryRequest::Wasm(token_info_query))?;

  let maximum_supply = minter_res.cap.unwrap();
  let current_supply = token_info_res.total_supply;
  let mintable_amount = maximum_supply - current_supply;
```

Minter can not issue more **Lenny Tokens** indefinitely.
Note that as of the date of publishing, the above review reflects the current understanding of known security patterns as they relate to the **LENNY TOKEN** contract.

Thus, this enables the approval of a token account for confidential transfers, even if it is associated with a different mint. Ideally, token accounts should only be allowed to hold tokens from the specific mint they are associated with. By not checking the mint consistency, the function effectively approves arbitrary token accounts for confidential transfers. Such unauthorized token mixing may have security and financial implications, as it could result in loss of value or assets for users who rely on the token system's integrity.

Recommendation

Incorporate the following verification within process_approve_account to confirm that the token account's associated mint aligns with the mint for which the confidential transfer approval is sought.

LNY-02 Key Findings

Category	Severity	Target	Status
Business Logic	Medium	Contract.rs	Fixed

Description

In **updateForTokenTax**, Relevant Function Snippet

```
} => execute::update_collecting_tax_address(deps, env, info, new_collect_tax_addr),
        ExecuteMsg::UpdateTaxInfo {
            buy_tax,
            sell_tax,
            transfer_tax,
        } => execute::update_tax_info(deps, env, info, buy_tax, sell_tax, transfer_tax),
        ExecuteMsg::SetTaxFreeAddress { address, tax_free } => {
            execute::set_tax_free_address(deps, env, info, address, tax_free)
```

Description

Tax() should be declared external: -
totalSupply() should be declared external:
- LENNY TOKEN.totalSupply() (Contract.rs#67-74

Recommendation

We recommend either checking for overflow in this case, or ensuring that the PairsIn is close enough it will never cause an overflow

LNY-03 Key Findings

Category	Severity ●	Target	Status
Inconsistency	Informational	Multiple Contracts	Acknowledge

Description

In **updateForAmount**, Relevant Function Snippet

```
let res: Response = Response::new()
            .add_message(WasmMsg::Execute {
                contract_addr: token_address.clone().into(),
                msg: to_binary(&withdraw_cw20_msg)?,
                funds: vec![],
            })
            .add_attribute("action", "withdraw")
            .add_attribute("token_address", token_address)
            .add_attribute("amount", locked_amount);
        Ok(res)
```

Description

The function amount0 () does not have the override specifier. It should be noted that since amount0 > a function That overrides only a single interface function does not require the override specifier. However, all other instances of thisin the codebase contain the override specifier

Recommendation

We recommend adding the override specifier to amount() or removing the override specifier from all other functions this applies to for consistency.

LNY-04 Key Findings

Category	Severity	Target	Status
Coding Practices	High	contracts/lenny_token/src/contract.rs	Acknowledge

Description

In **updateForAsset**, Relevant Function Snippet

```
contract: router.to_string(),
            amount: collected_tax_amount,
            msg: to_binary(&RouterExecuteMsg::ExecuteSwapOperations {
                operations: vec![
                    SwapOperation::TerraSwap {
                        offer_asset_info: AssetInfo::Token {
                            contract_addr: env.contract.address.to_string(),
                        },
                        ask_asset_info: AssetInfo::NativeToken {
                            denom: "uluna".to_string(),
```

Description

For any Asset Trading Platform, there is a need to reliably and accurately measure the Asset trading debt position and provide necessary means to liquidate underwater positions. The Lenny Token platform is no exception. While reviewing the implementation to measure the debt position, we notice the key function `offer_asset_info: AssetInfo::Token ()` needs to be improved.

Recommendation

Apply the right price oracle in the above `offer_asset_info: AssetInfo::Token ()` routine to compute the user account data.

YDL-05 Key Findings

Category	Severity	Target	Status
Coding Practices	low	contracts/lenny_token/src/testing.rs	Confirmed

Description

updateForbalance, Relevant Function Snippet

```
        let sender_balance_after = helpers::query_balance(&deps, &sender);
                let recipient_balance_after = helpers::query_balance(&deps,
&recipient);
                let collect_tax_wallet_balance_after =
                    helpers::query_balance(&deps, &collect_tax_wallet);
```

Description

While re-viewing arithmetic operations in current balance implementation, we notice occasions that may introduce unexpected overflows/underflows.

For example, if we examine the `helpers::query_balance(&deps, &sender);` function, it may revert if the current `collateralData` (line 821) is equal to 0. Another example is when the underlying asset of a recipient has an unusual decimal, which may revert the following calculation of `if sender == &collect_tax_wallet || recipient == &collect_tax_wallet {`
`assert_eq!(`

Note this calculation appears in a num- ber of routines. Its revert may bring in unnecessary frictions and cause issues for integration and composability.

Recommendation

Revise the above calculation to avoid the unnecessary overflows and under- flows.

LNY-06 Key Findings

Category	Severity ●	Target	Status
Coding Practices	low	contracts/lenny_token/src/contract.rs	Informational

Description

In **updateForOwner**, Relevant Function Snippet

```
 let new_owner = deps.api.addr_validate(&new_owner)?;
    OWNER.save(deps.storage, &new_owner)?;
    Ok(Response::new())
}

pub fn update_collecting_tax_address(
    deps: DepsMut,
    _env: Env,
    info: MessageInfo,
    new_collect_tax_addr: String,
) -> Result<Response, ContractError> {
    let owner = OWNER.load(deps.storage)?;
    if info.sender != owner {
        return Err(ContractError::Unauthorized {});
    }
```

Description

For Ownership efficiency, the Lenny Token is engineered with the reserve cache mechanism, which necessi-tates the common steps to be followed when operating with the reserve Ownership data in different scenarios, including the tax generation, update, and eventual persistence.

Recommendation

Revise the above functions to following a consistent approach to use the reserve cache mechanism.

Vulnerability Scan

REENTRANCY

No reentrancy risk found

Severity	Major
Confidence Parameter	Certain

Vulnerability Description

Mintable: More amount of the Yield Lend token can **NOT** be minted by a private wallet or contract. **(This is Essentially normal for most contracts)**

Scanning Line:

```
    let remaining_rewards_res: RemainingRewardsResponse = app
        .wrap()
        .query_wasm_smart(staking_address.clone(), &QueryMsg::RemainingRewards {})
        .unwrap();
    assert_eq!(
        remaining_rewards_res.remaining_rewards,
        MINTABLE_AMOUNT - reward

let remaining_rewards_res: RemainingRewardsResponse = app
        .wrap()
        .query_wasm_smart(staking_address.clone(), &QueryMsg::RemainingRewards {})
        .unwrap();
    assert_eq!(
        remaining_rewards_res.remaining_rewards,
        MINTABLE_AMOUNT - rewards[1] - rewards[2]
    );
```

Repository:

https://github.com/vinhtranz/cremation-coin/tree/main/contracts/lenny_token

Additional Audited Files

schema.rs
contract.rs
lib.rs
msg.rs
state.rs
testing.rs

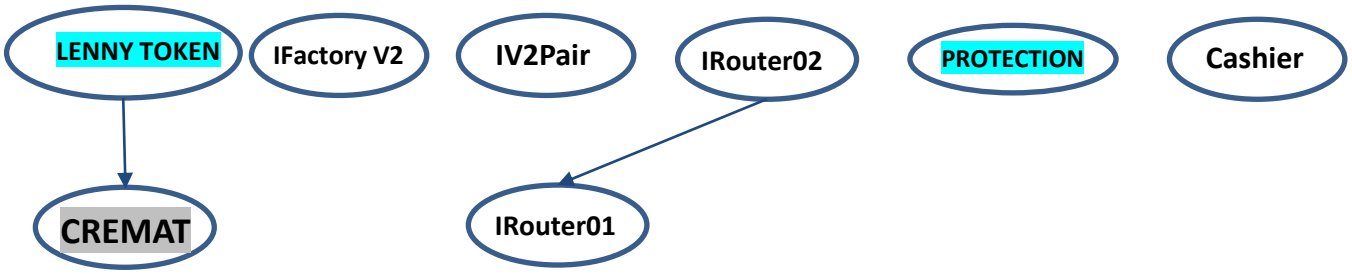
Contract Creator Address

TBA

Deployed Contracts:

TBA

INHERITANCE GRAPH



Identifier	Definition	Severity
CEN-12	Centralization privileges of LENNY TOKEN	Medium # 🟡

Vulnerability 0 : No important security issue detected.
Threat level: Low

.gitignore | testing.rs | contract.rs

```
280     }
281
282     pub fn set_tax_free_address(
283         deps: DepsMut,
284         _env: Env,
285         info: MessageInfo,
286         address: String,
287         tax_free: bool,
288     ) -> Result<Response, ContractError> {
289         let owner = OWNER.load(deps.storage)?;
290         if info.sender != owner {
291             return Err(ContractError::Unauthorized {});
292         }
293         let address = deps.api.addr_validate(&address)?;
294         TAX_FREE_ADDRESSES.save(deps.storage, address, &tax_free)?;
295         Ok(Response::new())
296     }
297
298     pub fn send(
```

ISSUES CHECKING STATUS

	Issue Description	Checking Status
1.	Compiler errors.	PASSED
2.	Race Conditions and reentrancy. Cross-Function Race Conditions.	PASSED
3.	Possible Delay In Data Delivery.	PASSED
4.	Oracle calls.	PASSED
5.	Front Running.	PASSED
6.	Sol. Dependency.	PASSED
7.	Integer Overflow And Underflow.	PASSED
8.	DoS with Revert.	PASSED
9.	Dos With Block Gas Limit.	PASSED
10.	Methods execution permissions.	PASSED
11.	Economy Model of the contract.	PASSED
12.	The Impact Of Exchange Rate On the solidity Logic.	PASSED
13.	Private use data leaks.	PASSED
14.	Malicious Event log.	PASSED
15.	Scoping and Declarations.	PASSED
16.	Uninitialized storage pointers.	PASSED
17.	Arithmetic accuracy.	PASSED
18.	Design Logic.	PASSED
19.	Cross-Function race Conditions	PASSED
20.	Save Upon solidity contract Implementation and Usage.	PASSED
21.	Fallback Function Security	PASSED

AUDIT RESULT

PASSED

Identifier	Definition	Severity
CEN-02	Initial asset distribution	Minor

All of the initially minted assets are sent to the contract deployer when deploying the contract. This is Normal for most deployer and/or contract owner .

```
function _swapTokensForETH(uint256 tokenAmount) internal {
    IAerodromeRouter.Route[] memory r = new IAerodromeRouter.Route[](1);
    IAerodromeRouter.Route memory route = IAerodromeRouter.Route({
        from: address(this),
        to: address(router.weth()),
        stable: false,
        factory: router.defaultFactory()
```

RECOMMENDATION

Project stakeholders should be consulted during the initial asset distribution process.

RECOMMENDATION

Deployer and/or contract owner private keys are secured carefully.

Please refer to PAGE-09 CENTRALIZED PRIVILEGES for a detailed understanding.

ALLEVIATION

The ARBITRUM EXCHANGE project team understands the centralization risk. Some functions are provided privileged access to ensure a good runtime behavior in the project

References

1 MITRE. CWE-1041: Use of Redundant Code. https://cwe.mitre.org/data/definitions/1041.html.

2 MITRE. CWE-1099: Inconsistent Naming Conventions for Identifiers. https://cwe.mitre.org/data/definitions/1099.html.

3 MITRE. CWE-561: Dead Code. https://cwe.mitre.org/data/definitions/561.html.

4 MITRE. CWE-563: Assignment to Variable without Use. https://cwe.mitre.org/data/definitions/563.html.

5 MITRE. CWE-663: Use of a Non-reentrant Function in a Concurrent Context. https://cwe.mitre.org/data/definitions/663.html.

6 MITRE. CWE-837: Improper Enforcement of a Single, Unique Action. https://cwe.mitre.org/data/definitions/837.html.

7 MITRE. CWE-841: Improper Enforcement of Behavioral Workflow. https://cwe.mitre.org/data/definitions/841.html.

8 MITRE. CWE CATEGORY: Bad Coding Practices. https://cwe.mitre.org/data/definitions/1006.html.

9 MITRE. CWE CATEGORY: Business Logic Errors. https://cwe.mitre.org/data/definitions/840.html.

10 MITRE. CWE CATEGORY: Concurrency. https://cwe.mitre.org/data/definitions/557.html.

11 MITRE. CWE VIEW: Development Concepts. https://cwe.mitre.org/data/definitions/699.html.

12 OWASP. Risk Rating Methodology. https://www.owasp.org/index.php/OWASP_Risk_Rating_Methodology.

Identifier	Definition	Severity
COD-10	Third Party Dependencies	Minor

Smart contract is interacting with third party protocols e.g., Pancakeswap router, cashier contract, protections contract. The scope of the audit treats third party entities as black boxes and assumes their functional correctness. However, in the real world, third parties can be compromised, and exploited. Moreover, upgrades in third parties can create severe impacts, e.g., increased transactional fees, deprecation of previous routers, etc.

RECOMMENDATION

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

DISCLAIMERS

Vital Block Security provides the easy-to-understand audit of Solidity, Move and Raw 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.

CONFIDENTIALITY

This report is subject to the terms and conditions (including without limitations, description of services, confidentiality, disclaimer and limitation of liability) outlined in the scope of the audit provided to the client. This report should not be transmitted, disclosed, referred to, or relied upon by any individual for any purpose without InterFi Network's prior written consent.

NO FINANCIAL ADVICE

This audit report does not indicate the endorsement of any particular project or team, nor guarantees its security. No third party should rely on the reports in any way, including to make any decisions to buy or sell a product, service or any other asset. The information provided in this report does not constitute investment advice, financial advice, trading advice, or any other sort of advice and you should not treat any of the report's content as such. This audit report should not be used in any way

to make decisions around investment or involvement. This report in no way provides investment advice, nor should be leveraged as investment advice of any sort.

FOR AVOIDANCE OF DOUBT, SERVICES, INCLUDING ANY ASSOCIATED AUDIT REPORTS OR MATERIALS, SHALL NOT BE CONSIDERED OR RELIED UPON AS ANY FORM OF FINANCIAL, TAX, LEGAL, REGULATORY, OR OTHER ADVICE.

TECHNICAL DISCLAIMER

ALL SERVICES, AUDIT REPORTS, SMART CONTRACT AUDITS, OTHER MATERIALS, OR ANY PRODUCTS OR RESULTS OF THE USE THEREOF ARE PROVIDED "AS IS" AND "AS AVAILABLE" AND WITH ALL FAULTS AND DEFECTS WITHOUT WARRANTY OF ANY KIND. TO THE MAXIMUM EXTENT PERMITTED UNDER APPLICABLE LAW, VITAL BLOCK HEREBY DISCLAIMS ALL WARRANTIES, WHETHER EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO SERVICES, AUDIT REPORT, OR OTHER MATERIALS. WITHOUT LIMITING THE FOREGOING, VITAL BLOCK SPECIFICALLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT, AND ALL WARRANTIES ARISING FROM THE COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

WITHOUT LIMITING THE FOREGOING, VITAL BLOCK MAKES NO WARRANTY OF ANY KIND THAT ALL SERVICES, AUDIT REPORTS, SMART CONTRACT AUDITS, OR OTHER MATERIALS, OR ANY PRODUCTS OR RESULTS OF THE USE THEREOF, WILL MEET THE CLIENT'S OR ANY OTHER INDIVIDUAL'S REQUIREMENTS, ACHIEVE ANY INTENDED RESULT, BE COMPATIBLE OR WORK WITH ANY SOFTWARE, SYSTEM, OR OTHER SERVICES, OR BE SECURE, ACCURATE, COMPLETE, FREE OF HARMFUL CODE, OR ERROR-FREE.

TIMELINESS OF CONTENT

The content contained in this audit report is subject to change without any prior notice. Vital Block does not guarantee or warrant the accuracy, timeliness, or completeness of any report you access using the internet or other means, and assumes no obligation to update any information following the publication.

LINKS TO OTHER WEBSITES

This audit report provides, through hypertext or other computer links, access to websites and social accounts operated by individuals other than Vital Block. Such hyperlinks are provided for your reference and convenience only and are the exclusive responsibility of such websites and social accounts owners. You agree that Vital block Security is not responsible for the content or operation of such websites and social accounts and that Vital Block shall have no liability to you or any other person or entity for the use of third-party websites and social accounts. You are solely responsible for determining the extent to which you may use any content at any other websites and social accounts to which you link from the report.

ABOUT VITAL BLOCK

Vital Block provides intelligent blockchain Security Solutions. We provide solidity and Raw Code Review, testing, and auditing services. We have Partnered with 15+ Crypto Launchpads, audited 50+ smart contracts, and analyzed 200,000+ code lines. We have worked on major public blockchains e.g., Ethereum, Binance, Cronos, Doge, Polygon, Avalanche, Metis, Fantom, Bitcoin Cash, Aptos, Oasis, etc.

Vital Block is Dedicated to Making Defi & Web3 A Safer Place. We are Powered by Security engineers, developers, UI experts, and blockchain enthusiasts. Our team currently consists of 5 core members, and 4+ casual contributors.

Website: https://Vitalblock.org

Email: info@vitalblock.org

GitHub: https://github.com/vital-block

Telegram (Engineering): https://t.me/vital_block

Telegram (Onboarding): https://t.me/vitalblock_cmo

vital-block

info@vitalblock.org

www.Vitalblock.org

Vital Block Dedicated to securing Public and Private Blockchain Ecosystem