SOLIDProof

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Blockchain Security | Smart Contract Audits | KYC

MADE IN GERMANY

Crombie

Audit

Security Assessment

26. August, 2022

For

CROMBIE

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Version	Date	Description
1.0	26. August 2022	• Layout project • Automated- /Manual-Security Testing • Summary

Network
Ethereum (ERC20)
Binance Smart Chain (BEP20)

Website
https://www.crombie.live/
https://www.lunajackpot.com/

Telegram
https://t.me/Crombies

Twitter
https://twitter.com/Luna_lands
https://twitter.com/Crombie_cronos

Description
TBA

Project Engagement
During the 24th of August 2022, **Crombie Team** engaged Solidproof.io to audit smart contracts that they created. The engagement was technical in nature and focused on identifying security flaws in the design and implementation of the contracts. They provided Solidproof.io with access to their code repository and whitepaper.

Logo


Contract Link
v1.0
- Provided as files

Vulnerability & Risk Level

Risk represents the probability that a certain source-threat will exploit vulnerability, and the impact of that event on the organization or system. Risk Level is computed based on CVSS version 3.0.

Level	Value	Vulnerability	Risk (Required Action)
Critical	9 - 10	A vulnerability that can disrupt the contract functioning in a number of scenarios, or creates a risk that the contract may be broken.	Immediate action to reduce risk level.
High	7 – 8.9	A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.	Implementation of corrective actions as soon aspossible.
Medium	4 – 6.9	A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.	Implementation of corrective actions in a certain period.
Low	2 – 3.9	A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.	Implementation of certain corrective actions or accepting the risk.
Informational	0 – 1.9	A vulnerability that have informational character but is not effecting any of the code.	An observation that does not determine a level of risk

Auditing Strategy and Techniques Applied

Throughout the review process, care was taken to evaluate the repository for security-related issues, code quality, and adherence to specification and best practices. To do so, reviewed line-by-line by our team of expert pentesters and smart contract developers, documenting any issues as there were discovered.

Methodology

The auditing process follows a routine series of steps:

1. Code review that includes the following:
    i) Review of the specifications, sources, and instructions provided to SolidProof to make sure we understand the size, scope, and functionality of the smart contract.
    ii) Manual review of code, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.
    iii) Comparison to specification, which is the process of checking whether the code does what the specifications, sources, and instructions provided to SolidProof describe.

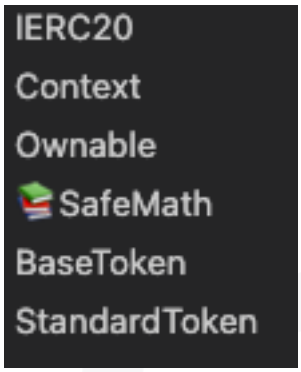
2. Testing and automated analysis that includes the following:
    i) Test coverage analysis, which is the process of determining whether the test cases are actually covering the code and how much code is exercised when we run those test cases.
    ii) Symbolic execution, which is analysing a program to determine what inputs causes each part of a program to execute.

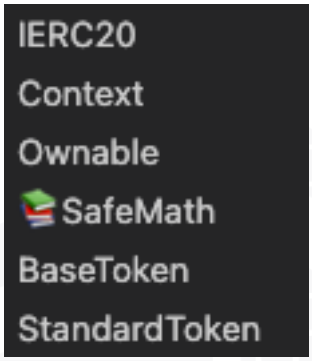
3. Best practices review, which is a review of the smart contracts to improve efficiency, effectiveness, clarify, maintainability, security, and control based on the established industry and academic practices, recommendations, and research.

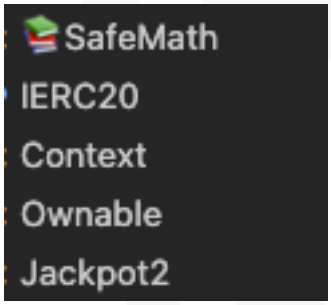
4. Specific, itemized, actionable recommendations to help you take steps to secure your smart contracts.

Used Code from other Frameworks/Smart Contracts (direct imports)

Imported packages:







Tested Contract Files

This audit covered the following files listed below with a SHA-1 Hash.

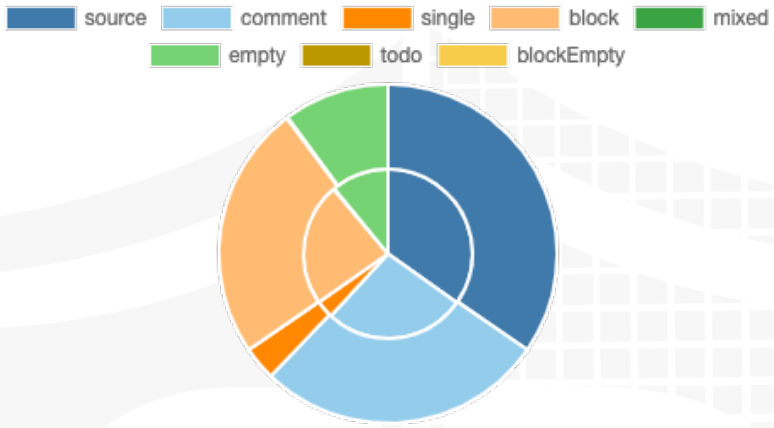
A file with a different Hash has been modified, intentionally or otherwise, after the security review. A different Hash could be (but not necessarily) an indication of a changed condition or potential vulnerability that was not within the scope of this review.

v1.0

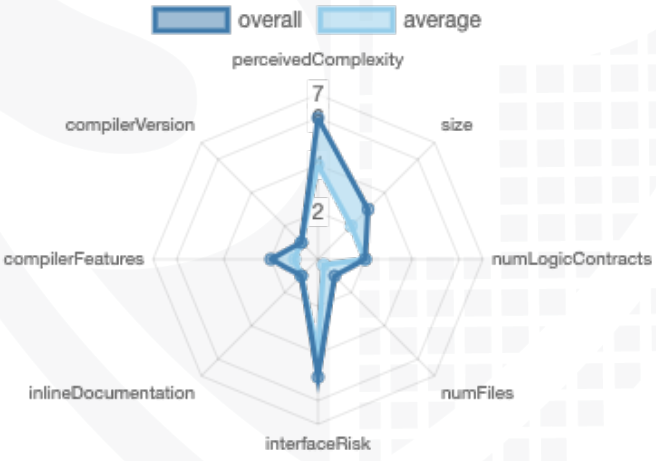
File Name	SHA-1 Hash
contracts/lunalandToken.sol	bd8a01fdf51df3cfcf4fb62489f07635d04bf168
contracts/Jackpot2(LunaWormhole).sol	93b07061b75edf0f800c8b9eaa0465ece72df98d
contracts/crombie2.sol	b542abe395f3ad10e9aee09cc57907b61c3ba07f

Metrics

Source Lines
v1.0



Risk Level
v1.0



Capabilities

Components

Version	Contracts	Libraries	Interfaces	Abstract
1.0	4	3	3	7

Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.

Version	Public	Payable
1.0	85	8

Version	External	Internal	Private	Pure	View
1.0	20	112	16	41	62

State Variables

Version	Total	Public
1.0	81	5

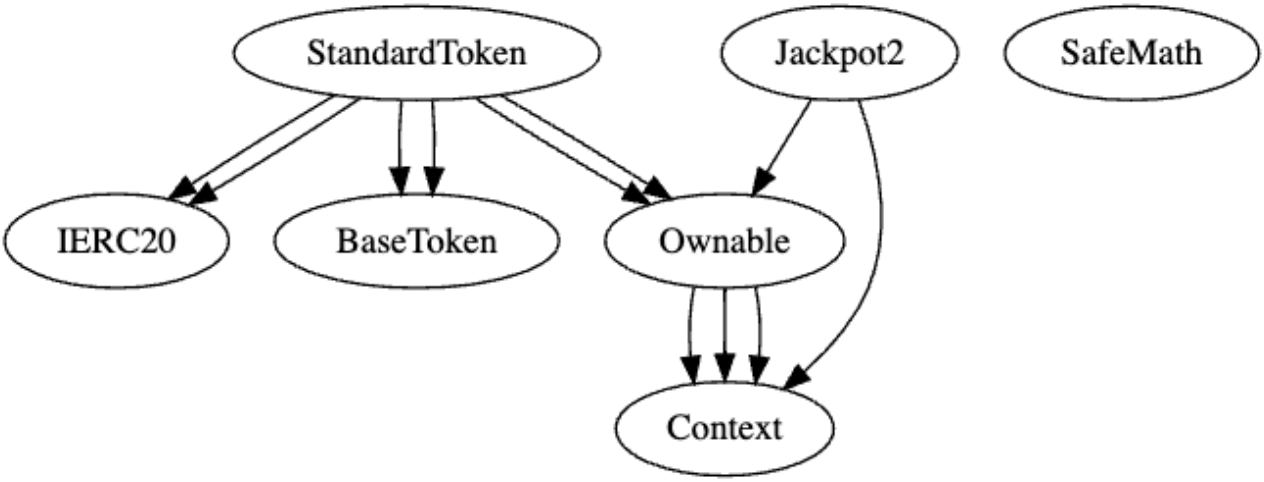
Capabilities

Version	Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
1.0	`>=0.8.13` `0.8.9`		`yes`		

Version	Transfers ETH	Low-Level Calls	DelegateCall	Uses Hash Functions	EC Recover	New/ Create/ Create2
1.0	yes					

Inheritance Graph

v1.0



CallGraph
v1.0

Scope of Work/Verify Claims

The above token Team provided us with the files that needs to be tested (Github, Bscscan, Etherscan, files, etc.). The scope of the audit is the main contract (usual the same name as team appended with .sol).

We will verify the following claims:

1. Is contract an upgradeable
2. Correct implementation of Token standard
3. Deployer cannot mint any new tokens
4. Deployer cannot burn or lock user funds
5. Deployer cannot pause the contract
6. Deployer cannot set fees
7. Deployer cannot blacklist/antisnipe addresses
8. Overall checkup (Smart Contract Security)

Is contract an upgradeable

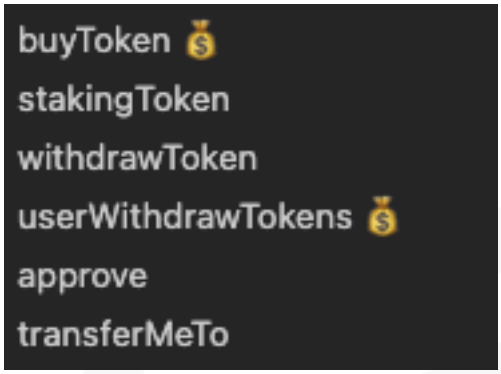
Name	
Is contract an upgradeable?	No

Correct implementation of Token standard

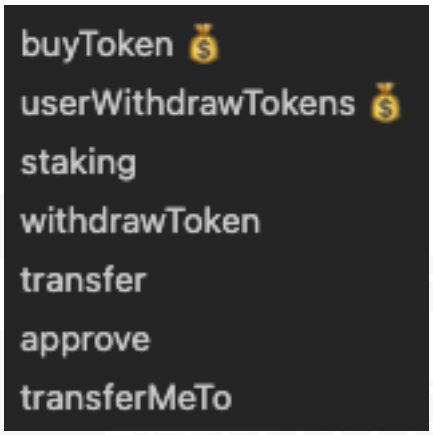
ERC20				
Function	**Description**	**Exist**	**Tested**	**Verified**
TotalSupply	Provides information about the total token supply	✓	✓	✓
BalanceOf	Provides account balance of the owner's account	✓	✓	✓
Transfer	Executes transfers of a specified number of tokens to a specified address	✓	✓	✓
TransferFrom	Executes transfers of a specified number of tokens from a specified address	✓	✓	✓
Approve	Allow a spender to withdraw a set number of tokens from a specified account	✓	✓	✓
Allowance	Returns a set number of tokens from a spender to the owner	✓	✓	✓

Write functions of contract v1.0

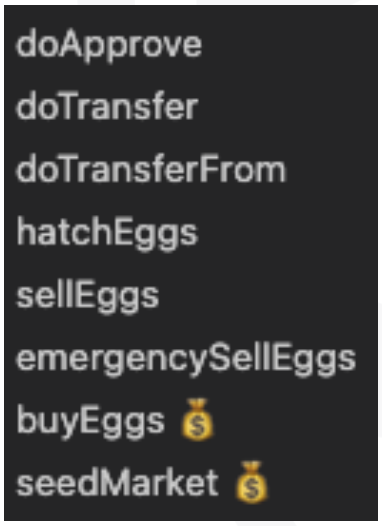
Crombie2.sol

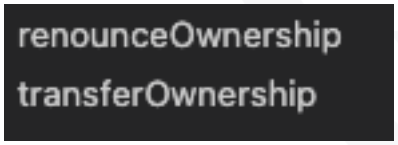


LunalandToken.sol



Jackpot2(LunaWormhole).sol





Note: Crombie2.sol and LunalandToken.sol file inherited from Ownable but functions was modified. All basic public functions were changed to private. Owner is not able to renounce/transfer ownership

Deployer cannot mint any new tokens

Name	Exist	Tested	Status
Deployer cannot mint	✓	✓	✓

Deployer cannot burn or lock user funds

Name	Exist	Tested	Status
Deployer cannot lock	✓	✓	✓
Deployer cannot burn	✓	✓	✓

Comments:

v1.0

- Tokens
  - will be burned while tx
    - selling eggs in Jackpot2
    - buyToken in LunalandToken

Deployer cannot pause the contract

Name	Exist	Tested	Status
Deployer cannot pause	–	–	–

Deployer cannot set fees

Name	Exist	Tested	Status
Deployer cannot set fees over 25%	–	–	–
Deployer cannot set fees to nearly 100% or to 100%	–	–	–

Deployer can blacklist/antisnipe addresses

Name	Exist	Tested	Status
Deployer cannot blacklist/antisnipe addresses	–	–	–

Overall checkup (Smart Contract Security)

Tested	Verified
✓	✓

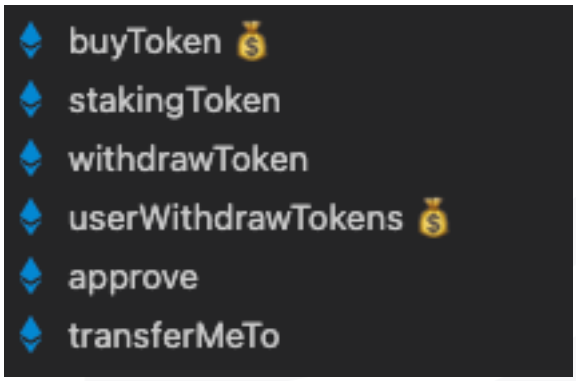
Legend

Attribute	Symbol
Verified / Checked	✓
Partly Verified	⚑
Unverified / Not checked	✗
Not available	-

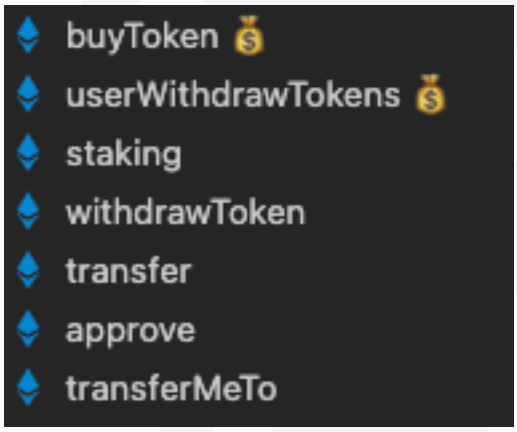
Modifiers and public functions

v1.0

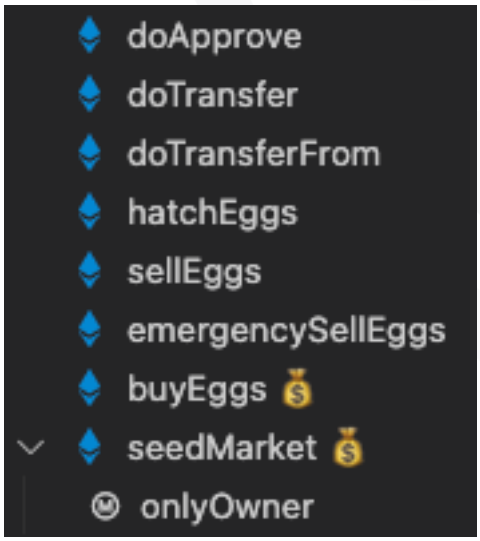
Crombie2.sol

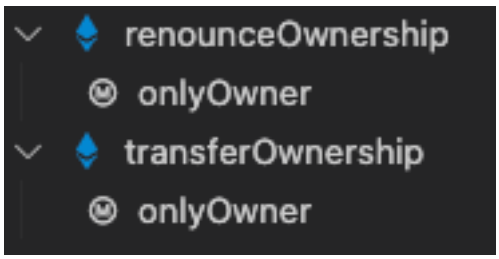


LunalandToken.sol



Jackpot2(LunaWormhole).sol





Comments

- Crombie2.sol
  - Tokens can be bought with native
  - Quick tip: You can initialize values directly instead of declaring it and initializing it later in “buyToken” function L617-L621
  - userBNBvalue will never decreased
- We recommend you to start private internal functions with an underscore
- “transferFrom" functionality is not the basic one. ERC20 functions were modified into private functions and so on. Please do your research here.
- LunalandToken.sol
  - While staking the staking amount will go to the owner if timestamp minutes startTime is below 7 days
  - transferFrom is used without decreasing allowance
  - While withdrawToken

Please check if an OnlyOwner or similar restrictive modifier has been forgotten.

Source Units in Scope
v1.0

Type	File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
📝📚🔍💊	contracts/lunalandToken.sol	5	1	1126	986	461	429	329	💰💠🔆Σ
📝📚🔍💊	contracts/Jackpot2(LunaWormhole).sol	4	1	604	536	311	199	243	💰💠🔆Σ
📝📚🔍💊	contracts/crombie2.sol	5	1	1033	893	385	428	245	💰💠🔆Σ
📝📚🔍💊	**Totals**	**14**	**3**	**2763**	**2415**	**1157**	**1056**	**817**	💰💠🔆Σ

Legend

Attribute	Description
Lines	total lines of the source unit
nLines	normalised lines of the source unit (e.g. normalises functions spanning multiple lines)
nSLOC	normalised source lines of code (only source-code lines; no comments, no blank lines)
Comment Lines	lines containing single or block comments
Complexity Score	a custom complexity score derived from code statements that are known to introduce code complexity (branches, loops, calls, external interfaces, ...)

Audit Results

Critical issues

No critical issues

High issues

No high issues

Medium issues

Issue	File	Type	Line	Description
#1	Crombie2	Uninitialised variable	487	Contract is using the variable. Initialize all the variables otherwise the contract is not working as it supposed to be
#2	LunalandToken.sol	Uninitialised variable	489	Contract is using the variable. Initialize all the variables otherwise the contract is not working as it supposed to be

Low issues

Issue	File	Type	Line	Description
#1	All	Contract doesn't import npm packages from source (like OpenZeppelin etc.)	-	We recommend to import all packages from npm directly without flatten the contract. Functions could be modified or can be susceptible to vulnerabilities
#2	Crombie2	A floating pragma is set	471	The current pragma Solidity directive is „“>=0.8.13””.
#3	LunalandToken.sol	A floating pragma is set	471	The current pragma Solidity directive is „“>=0.8.13””.
#4	Jackpot2	State variable visibility is not set	384, 390	It is best practice to set the visibility of state variables explicitly
#5	Crombie2	Local variables shadowing	992, 782	Rename the local variables that shadow another component

#6	LunalandToken.sol	saleCollage will not increased	-	Logic of “saleCollage” is not correct. The contract is not increasing the value while buying tokens
#7	LunalandToken.sol	User withdraw	671	User can withdraw instantly
#8	Jackpot2	payable	520	Function is payable but msg.value was never used

Informational issues

Issue	File	Type	Line	Description
#1	Jackpot2	State variables that could be declared constant (constable-states)	362 381 377 363 364 380 376 373 378 392 379 374 395 394 396 366 382 375 384	Add the `constant` attributes to state variables that never change
#2	LunalandToken.sol	State variables that could be declared constant (constable-states)	502, 514, 500, 496, 509, 515	Add the `constant` attributes to state variables that never change
#3	Crombie2	State variables that could be declared constant (constable-states)	503, 516, 498, 515, 500, 514, 518,	Add the `constant` attributes to state variables that never change
#4	Jackpot2	Unused state variables	366	Remove unused state variables
#5	LunalandToken.sol	Unused state variables	507	Remove unused state variables

#6	Crombie2	Unused state variables	489	Remove unused state variables
#7	Jackpot 2	Error message is missing	439, 463, 490, 521, 578	Provide an error message for require statement
#8	All	NatSpec documentation missing	-	If you started to comment your code, also comment all other functions, variables etc.
#9	All	Unnecessary library	See description	You must not implement SafeMath library because it is already implemented by default above pragma version 0.8.x. If you are going to remove the library make sure, that you are replacing “safemath” functionalities with raw math operations

Commented Code exist

There are some instances of code being commented out in the following files that should be removed. Remove the commented code, or address them properly.

Audit Comments

We recommend you to use the special form of comments (NatSpec Format, Follow link for more information https://docs.soliditylang.org/en/v0.5.10/natspec-format.html) for your contracts to provide rich documentation for functions, return variables and more. This helps investors to make clear what that variables, functions etc. do.

26. August 2022:

- Token in Jackpot2.sol was not provided to solidproof. Please do your own research.
- Read whole report and modifiers section for more information

SWC Attacks

ID	Title	Relationships	Status
SWC-136	Unencrypted Private Data On-Chain	CWE-767: Access to Critical Private Variable via Public Method	PASSED
SWC-135	Code With No Effects	CWE-1164: Irrelevant Code	PASSED
SWC-134	Message call with hardcoded gas amount	CWE-655: Improper Initialization	PASSED
SWC-133	Hash Collisions With Multiple Variable Length Arguments	CWE-294: Authentication Bypass by Capture-replay	PASSED
SWC-132	Unexpected Ether balance	CWE-667: Improper Locking	PASSED
SWC-131	Presence of unused variables	CWE-1164: Irrelevant Code	NOT PASSED
SWC-130	Right-To-Left-Override control character (U+202E)	CWE-451: User Interface (UI) Misrepresentation of Critical Information	PASSED
SWC-129	Typographical Error	CWE-480: Use of Incorrect Operator	PASSED
SWC-128	DoS With Block Gas Limit	CWE-400: Uncontrolled Resource Consumption	PASSED

SWC-127	Arbitrary Jump with Function Type Variable	CWE-695: Use of Low-Level Functionality	PASSED
SWC-125	Incorrect Inheritance Order	CWE-696: Incorrect Behavior Order	PASSED
SWC-124	Write to Arbitrary Storage Location	CWE-123: Write-what-where Condition	PASSED
SWC-123	Requirement Violation	CWE-573: Improper Following of Specification by Caller	PASSED
SWC-122	Lack of Proper Signature Verification	CWE-345: Insufficient Verification of Data Authenticity	PASSED
SWC-121	Missing Protection against Signature Replay Attacks	CWE-347: Improper Verification of Cryptographic Signature	PASSED
SWC-120	Weak Sources of Randomness from Chain Attributes	CWE-330: Use of Insufficiently Random Values	PASSED
SWC-119	Shadowing State Variables	CWE-710: Improper Adherence to Coding Standards	NOT PASSED
SWC-118	Incorrect Constructor Name	CWE-665: Improper Initialization	PASSED
SWC-117	Signature Malleability	CWE-347: Improper Verification of Cryptographic Signature	PASSED

SWC-116	Timestamp Dependence	CWE-829: Inclusion of Functionality from Untrusted Control Sphere	PASSED
SWC-115	Authorization through tx.origin	CWE-477: Use of Obsolete Function	PASSED
SWC-114	Transaction Order Dependence	CWE-362: Concurrent Execution using Shared Resource with Improper Synchronization ('Race Condition')	PASSED
SWC-113	DoS with Failed Call	CWE-703: Improper Check or Handling of Exceptional Conditions	PASSED
SWC-112	Delegatecall to Untrusted Callee	CWE-829: Inclusion of Functionality from Untrusted Control Sphere	PASSED
SWC-111	Use of Deprecated Solidity Functions	CWE-477: Use of Obsolete Function	PASSED
SWC-110	Assert Violation	CWE-670: Always-Incorrect Control Flow Implementation	PASSED
SWC-109	Uninitialized Storage Pointer	CWE-824: Access of Uninitialized Pointer	PASSED
SWC-108	State Variable Default Visibility	CWE-710: Improper Adherence to Coding Standards	NOT PASSED
SWC-107	Reentrancy	CWE-841: Improper Enforcement of Behavioral Workflow	PASSED
SWC-106	Unprotected SELFDESTRUCT Instruction	CWE-284: Improper Access Control	PASSED

SWC-105	Unprotected Ether Withdrawal	CWE-284: Improper Access Control	PASSED
SWC-104	Unchecked Call Return Value	CWE-252: Unchecked Return Value	PASSED
SWC-103	Floating Pragma	CWE-664: Improper Control of a Resource Through its Lifetime	NOT PASSED
SWC-102	Outdated Compiler Version	CWE-937: Using Components with Known Vulnerabilities	PASSED
SWC-101	Integer Overflow and Underflow	CWE-682: Incorrect Calculation	PASSED
SWC-100	Function Default Visibility	CWE-710: Improper Adherence to Coding Standards	PASSED