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**Blockchain Security | Smart Contract Audits | KYC**

MADE IN GERMANY

# PapaDoge Audit

**Security Assessment**  
**02. March, 2022**

**For**



**papa doge**

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Version	Date	Description
1.0	02. March 2022	<ul style="list-style-type: none"><li>• Layout project</li><li>• Automated- /Manual-Security Testing</li><li>• Summary</li></ul>

## Network

Ethereum (ERC20)

Binance Smart Chain (BEP20)

## Website

<https://www.daobydoge.com/>

## Telegram

<https://t.me/daobydoge>

## Twitter

<https://twitter.com/papadogecoin>



## Description

First ever Token with multi-token reward system built on top of revolutionizing DAObyDoge. Join DAObyDoge to vote on which tokens you want to receive next quarter (June 1st). VOTE page will be open after the presale period.

PapaDoge has started as a way of revolutionizing traditional DeFi space: PapaDoge is launching DogePay & DogeChain in May on our website. Please stay tuned.

## Project Engagement

During the 28th of February 2022, **Papa Doge 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



**papa doge**

## 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)
<b>Critical</b>	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.
<b>High</b>	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 as possible.
<b>Medium</b>	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.
<b>Low</b>	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.
<b>Informational</b>	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.

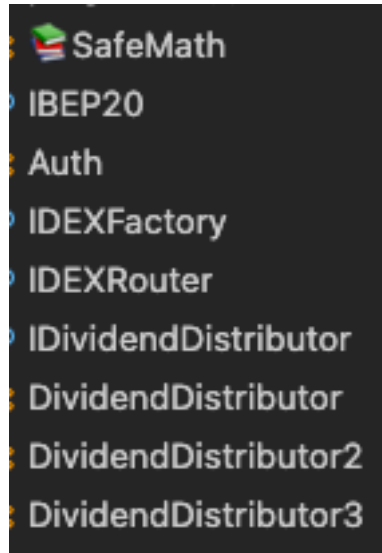
## **Methodology**

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.

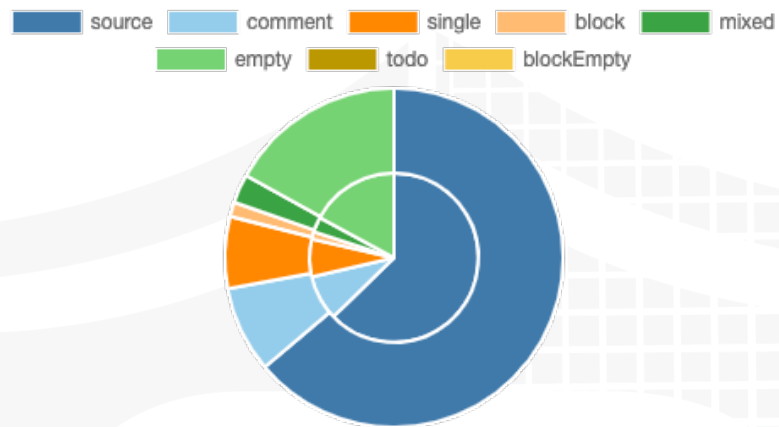
*A file with a different Hash has been modified, intentionally or otherwise, after the security review. A different Hash could be (but not necessarily) an indication of a changed condition or potential vulnerability that was not within the scope of this review.*

### v1.0

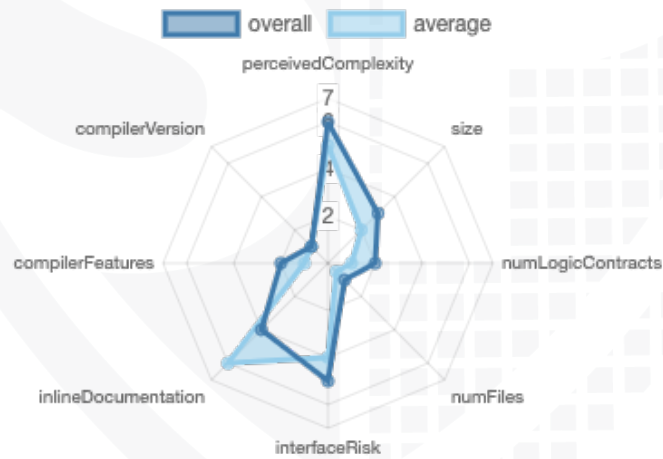
File Name	SHA-1 Hash
contracts/FinalizedPapaDoge.sol	edb2d222d7e140271988561603708740092a5217
contracts/FinalizedPapaDogeDao.sol	3ad3a45486c482da687c234d645d30067dcb8aa6

# Metrics

## Source Lines v1.0



## Risk Level v1.0



## Capabilities

### Components

Version	Contracts	Libraries	Interfaces	Abstract
1.0	6	1	4	1

### 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	101	7

Version	External	Internal	Private	Pure	View
1.0	66	115	0	18	46

### State Variables

Version	Total	Public
1.0	129	64

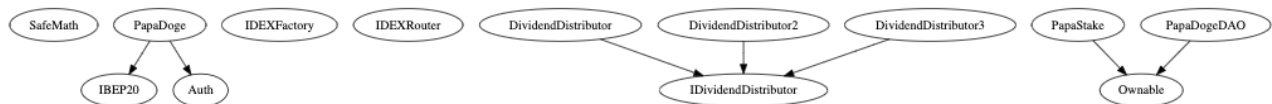
### Capabilities

Version	Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
1.0	<code>^0.8.0</code>		yes		

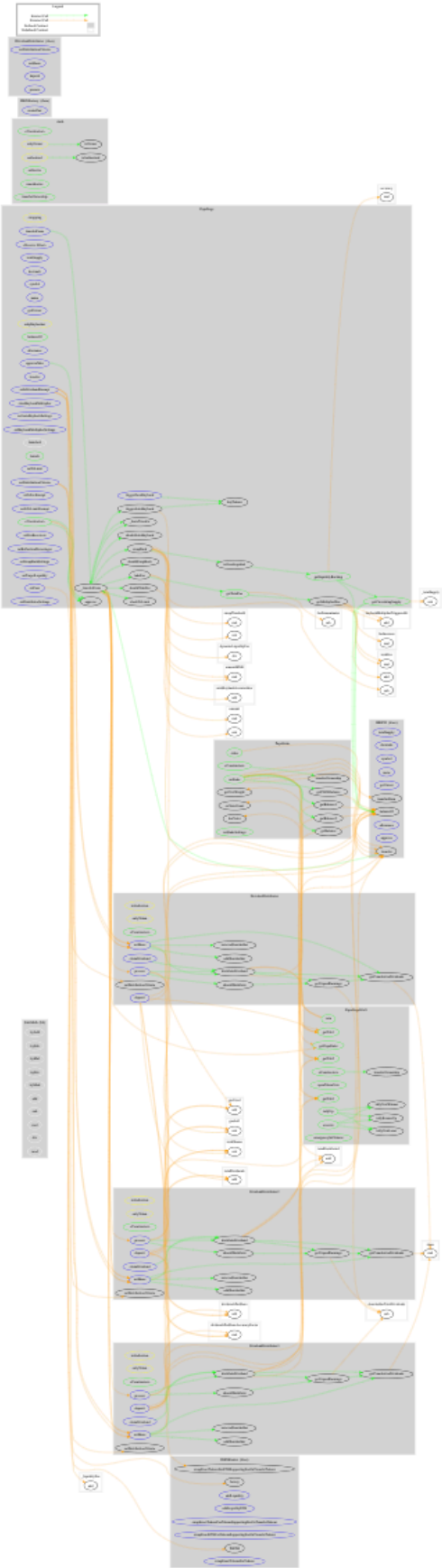
Version	Transfers ETH	Low-Level Calls	DelegateCall	Uses Hash Functions	EC Recover	New/Create/Create2
---------	---------------	-----------------	--------------	---------------------	------------	--------------------

1.0	yes					yes → NewContract:PapaDogeDAO → NewContract:DividendDistributor → NewContract:DividendDistributor2 → NewContract:DividendDistributor3 → NewContract:PapaStake
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## 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. Correct implementation of Token standard
2. Deployer cannot mint any new tokens
3. Deployer cannot burn or lock user funds
4. Deployer cannot pause the contract
5. Overall checkup (Smart Contract Security)

### Correct implementation of Token standard

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

▼ PAPADOGEDAO	▼ PAPADOGE	▼ PAPASTAKE
emergencySetTokens	approve	renounceOwnership
execute	approveMax	setStakeSettings
openTokenVote	authorize	setVoteCount
renounceOwnership	clearBuybackMultiplier	stake
transferOwnership	launch	transferOwnership
vote	setAutoBuybackSettings	unStake
	setBuybackMultiplierSettings	
	setDistributionCriteria	
	setDistributorSettings	
	setFeeReceivers	
	setFees	
	setIsDividendExempt	
	setIsFeeExempt	
	setIsTxLimitExempt	
	setReflectionPercentages	
	setSwapBackSettings	
	setTargetLiquidity	
	setTxLimit	
	transfer	
	transferFrom	
	transferOwnership	
	triggerZeusBuyback	
	unauthorize	

## 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	-	-	-



## Deployer cannot pause the contract

Name	Exist	Tested	Status
Deployer cannot pause	—	—	—



## 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

## PapaDoge

- approve
- approveMax
- transfer
- transferFrom
- triggerZeusBuyback
  - Ⓜ authorized
- clearBuybackMultiplier
  - Ⓜ authorized
- setAutoBuybackSettings
  - Ⓜ authorized
- setBuybackMultiplierSettings
  - Ⓜ authorized
- launch
  - Ⓜ authorized
- setTxLimit
  - Ⓜ authorized
- setIsDividendExempt
  - Ⓜ authorized
- setIsFeeExempt
  - Ⓜ authorized
- setIsTxLimitExempt
  - Ⓜ authorized
- setFees
  - Ⓜ authorized
- setFeeReceivers
  - Ⓜ authorized
- setReflectionPercentages
  - Ⓜ authorized
- setSwapBackSettings
  - Ⓜ authorized
- setTargetLiquidity
  - Ⓜ authorized
- setDistributionCriteria
  - Ⓜ authorized
- setDistributorSettings
  - Ⓜ authorized

## Auth

- authorize
  - Ⓜ onlyOwner
- unauthorize
  - Ⓜ onlyOwner
- transferOwnership
  - Ⓜ onlyOwner

## PapaStake

- stake
- unStake
- setVoteCount
- setStakeSettings
  - Ⓜ onlyOwner

## PapaDogeDao

- openTokenVote
  - Ⓜ onlyOwner
- vote
- execute
  - Ⓜ onlyOwner
- emergencySetTokens
  - Ⓜ onlyOwner







## Comments

- Deployer can set following state variables without any limitations
  - buybackMultiplierTriggeredAt
  - autoBuybackCap
  - autoBuybackAccumulator
  - autoBuybackAmount
  - autoBuybackBlockPeriod
  - autoBuybackBlockLast
  - buybackMultiplierNumerator
  - buybackMultiplierDenominator
  - buybackMultiplierLength
  - liquidityFee
  - buybackFee
  - reflectionFee
  - totalFee
  - feeDenominator
  - swapThreshold
  - targetLiquidity
  - targetLiquidityDenominator
  - minPeriod
  - minDistribution
  - stakingPeriod
  - voteEnd
- Deployer can enable/disable following state variables
  - authorizations
  - autoBuybackEnabled
  - isDividendExempt
  - isFeeExempt
  - isTxLimitExempt
  - swapEnabled
- Deployer can set following addresses
  - autoLiquidityReceiver
  - candidates[counter].token1
  - candidates[counter].token2
  - candidates[counter].token3
  - refToken1
  - refToken2
  - refToken3

**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/FinalizedPapaDoge.sol	6	4	1207	1129	832	77	791	
	contracts/FinalizedPapaDogeDao.sol	2	—	321	321	231	69	168	
	<b>Totals</b>	<b>8</b>	<b>4</b>	<b>1528</b>	<b>1450</b>	<b>1063</b>	<b>146</b>	<b>959</b>	

## Legend

Attribute	Description
Lines	total lines of the source unit
nLines	normalized lines of the source unit (e.g. normalizes functions spanning multiple lines)
nSLOC	normalized 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

# AUDIT PASSED

## Critical issues

**No critical issues**

## High issues

**No high issues**

## Medium issues

**No medium issues**

## 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	All	A floating pragma is set	2	The current pragma Solidity directive is „^0.8.0”.
#3	Finalize dPapaDoge	Missing Zero Address Validation (missing-zero-check)	162, 1151	Check that the address is not zero

#4	Finalize dPapaD oge	State variable visibility is not set	764, 765, 766, 772, 775, 776, 778, 779, 780, 782, 783, 784, 785, 786, 795, 796, 804, 805, 806, 807, 810, 811, 812, 813, 814, 815, 817, 818, 819, 824, 827, 831, 589, 598, 599, 600, 602, 603, 604, 617, 619, 415, 424, 425, 426, 428, 429, 430, 443, 445, 241, 251, 252, 253, 255, 256, 257, 270, 272	It is best practice to set the visibility of state variables explicitly
#5	Finalize dPapaD ogeDao	State variable visibility is not set	23	It is best practice to set the visibility of state variables explicitly
#6	Finalize dPapaD oge	Missing Events Arithmetic	293, 294, 465, 466, 639, 640, 1088-1093, 1098-1100, 1143-1147, 1159-1161, 1165-1166, 1170-1171, 1116, 223, 144	Emit an event for critical parameter changes
#7	Finalize dPapaD oge	Wrong import name	4	Please correct your import filename  FinalizedPapaDogeDAO is imported instead of FinalizedPapaDogeDao (lower case Dao)



#8	Finalize dPapaD ogeDao	Checksum error	191	This looks like an address but has an invalid checksum. Correct checksummed address: "0xbA2aE424d960c26247Dd6c32edC70B295c744C43". If this is not used as an address, please prepend '00'. For more information please see <a href="https://docs.soliditylang.org/en/develop/types.html#address-literals">https://docs.soliditylang.org/en/develop/types.html#address-literals</a>
#9	Finalize dPapaD ogeDao	Missing return	102, 255, 268, 281	In all if else conditions it returns a value. Return explicitly an uint/address value after if else conditions or change your conditions in this way, that there is an else condition.

## Informational issues

Issue	File	Type	Line	Description
#1	Finalize dPapaD oge	State variables that could be declared constant (constable-states)	251, 265, 424, 438, 598, 612, 764, 766, 765, 772, 793	Add the `constant` attributes to state variables that never change
#2	Finalize dPapaD ogeDao	State variables that could be declared constant (constable-states)	26, 27, 28, 29, 30, 31	Add the `constant` attributes to state variables that never change
#3	Finalize dPapaD oge	Functions that are not used	1103	Remove unused functions
#4	Finalize dPapaD oge	Unused state variables	766	Remove unused state variables

#5	All	Safemath is unnecessary	See description	<p>Safemath is automatically implemented above pragma version 0.8.x.</p> <p>If you want to remove the safemath library make sure to change every safemath operations in raw mathematical operations</p>
#6	Finalize dPapaDogeDao	Misspelling	See description	<p>Change the following:</p> <ul style="list-style-type: none"> <li>- recieving to receiving L9</li> <li>- weighted to weighted L10</li> <li>- totalshareheld to totalSharehold L70, L71</li> </ul> <p>Make sure to change it everywhere else as well</p>
#7	Finalize dPapaDogeDao	Misspelling	See description	<p>Change the following:</p> <ul style="list-style-type: none"> <li>- threshhold to threshold L999</li> <li>- liquidiy to liquidity L1066</li> </ul> <p>Make sure to change it everywhere else as well</p>

## Commented Code exist

There are some instances of code being commented out in the following files that should be removed:

File	Line	Comment
Finalized PapaDoge	242	//IBEP20 public refToken = papadogeDAO.refToken1;

## Recommendation

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.

## 02. March 2022:

- [Read whole report for more information](#)



## SWC Attacks

ID	Title	Relationships	Status
<a href="#">SW C-1 36</a>	Unencrypted Private Data On-Chain	<a href="#">CWE-767: Access to Critical Private Variable via Public Method</a>	PASSED
<a href="#">SW C-1 35</a>	Code With No Effects	<a href="#">CWE-1164: Irrelevant Code</a>	PASSED
<a href="#">SW C-1 34</a>	Message call with hardcoded gas amount	<a href="#">CWE-655: Improper Initialization</a>	PASSED
<a href="#">SW C-1 33</a>	Hash Collisions With Multiple Variable Length Arguments	<a href="#">CWE-294: Authentication Bypass by Capture-replay</a>	PASSED
<a href="#">SW C-1 32</a>	Unexpected Ether balance	<a href="#">CWE-667: Improper Locking</a>	PASSED
<a href="#">SW C-1 31</a>	Presence of unused variables	<a href="#">CWE-1164: Irrelevant Code</a>	PASSED
<a href="#">SW C-1 30</a>	Right-To-Left-Override control character (U+202E)	<a href="#">CWE-451: User Interface (UI) Misrepresentation of Critical Information</a>	PASSED
<a href="#">SW C-1 29</a>	Typographical Error	<a href="#">CWE-480: Use of Incorrect Operator</a>	PASSED
<a href="#">SW C-1 28</a>	DoS With Block Gas Limit	<a href="#">CWE-400: Uncontrolled Resource Consumption</a>	PASSED

<a href="#">SW C-1 27</a>	Arbitrary Jump with Function Type Variable	<a href="#">CWE-695: Use of Low-Level Functionality</a>	<b>PASSED</b>
<a href="#">SW C-1 25</a>	Incorrect Inheritance Order	<a href="#">CWE-696: Incorrect Behavior Order</a>	<b>PASSED</b>
<a href="#">SW C-1 24</a>	Write to Arbitrary Storage Location	<a href="#">CWE-123: Write-what-where Condition</a>	<b>PASSED</b>
<a href="#">SW C-1 23</a>	Requirement Violation	<a href="#">CWE-573: Improper Following of Specification by Caller</a>	<b>PASSED</b>
<a href="#">SW C-1 22</a>	Lack of Proper Signature Verification	<a href="#">CWE-345: Insufficient Verification of Data Authenticity</a>	<b>PASSED</b>
<a href="#">SW C-1 21</a>	Missing Protection against Signature Replay Attacks	<a href="#">CWE-347: Improper Verification of Cryptographic Signature</a>	<b>PASSED</b>
<a href="#">SW C-1 20</a>	Weak Sources of Randomness from Chain Attributes	<a href="#">CWE-330: Use of Insufficiently Random Values</a>	<b>PASSED</b>
<a href="#">SW C-11 9</a>	Shadowing State Variables	<a href="#">CWE-710: Improper Adherence to Coding Standards</a>	<b>PASSED</b>
<a href="#">SW C-11 8</a>	Incorrect Constructor Name	<a href="#">CWE-665: Improper Initialization</a>	<b>PASSED</b>
<a href="#">SW C-11 7</a>	Signature Malleability	<a href="#">CWE-347: Improper Verification of Cryptographic Signature</a>	<b>PASSED</b>

<a href="#">SW C-11 6</a>	Timestamp Dependence	<a href="#">CWE-829: Inclusion of Functionality from Untrusted Control Sphere</a>	PASSED
<a href="#">SW C-11 5</a>	Authorization through tx.origin	<a href="#">CWE-477: Use of Obsolete Function</a>	PASSED
<a href="#">SW C-11 4</a>	Transaction Order Dependence	<a href="#">CWE-362: Concurrent Execution using Shared Resource with Improper Synchronization ('Race Condition')</a>	PASSED
<a href="#">SW C-11 3</a>	DoS with Failed Call	<a href="#">CWE-703: Improper Check or Handling of Exceptional Conditions</a>	PASSED
<a href="#">SW C-11 2</a>	Delegatecall to Untrusted Callee	<a href="#">CWE-829: Inclusion of Functionality from Untrusted Control Sphere</a>	PASSED
<a href="#">SW C-11 1</a>	Use of Deprecated Solidity Functions	<a href="#">CWE-477: Use of Obsolete Function</a>	PASSED
<a href="#">SW C-11 0</a>	Assert Violation	<a href="#">CWE-670: Always-Incorrect Control Flow Implementation</a>	PASSED
<a href="#">SW C-1 09</a>	Uninitialized Storage Pointer	<a href="#">CWE-824: Access of Uninitialized Pointer</a>	PASSED
<a href="#">SW C-1 08</a>	State Variable Default Visibility	<a href="#">CWE-710: Improper Adherence to Coding Standards</a>	NOT PASSED
<a href="#">SW C-1 07</a>	Reentrancy	<a href="#">CWE-841: Improper Enforcement of Behavioral Workflow</a>	PASSED
<a href="#">SW C-1 06</a>	Unprotected SELFDESTRUCT Instruction	<a href="#">CWE-284: Improper Access Control</a>	PASSED

<a href="#">SW</a> <a href="#">C-1</a> <a href="#">05</a>	Unprotected Ether Withdrawal	<a href="#">CWE-284: Improper Access Control</a>	<b>PASSED</b>
<a href="#">SW</a> <a href="#">C-1</a> <a href="#">04</a>	Unchecked Call Return Value	<a href="#">CWE-252: Unchecked Return Value</a>	<b>PASSED</b>
<a href="#">SW</a> <a href="#">C-1</a> <a href="#">03</a>	Floating Pragma	<a href="#">CWE-664: Improper Control of a Resource Through its Lifetime</a>	<b>NOT PASSED</b>
<a href="#">SW</a> <a href="#">C-1</a> <a href="#">02</a>	Outdated Compiler Version	<a href="#">CWE-937: Using Components with Known Vulnerabilities</a>	<b>PASSED</b>
<a href="#">SW</a> <a href="#">C-1</a> <a href="#">01</a>	Integer Overflow and Underflow	<a href="#">CWE-682: Incorrect Calculation</a>	<b>PASSED</b>
<a href="#">SW</a> <a href="#">C-1</a> <a href="#">00</a>	Function Default Visibility	<a href="#">CWE-710: Improper Adherence to Coding Standards</a>	<b>PASSED</b>

The logo features the word "SolidProofed" in a white, handwritten-style script. The text is set against a dark blue background that includes a faint, stylized shield emblem. The shield has a grid-like pattern on its right side and a solid blue area on its left. The overall design is clean and professional, emphasizing security and reliability.

SolidProofed

**Blockchain Security | Smart Contract Audits | KYC**

A small horizontal bar representing the German flag, with black, red, and gold stripes.

MADE IN GERMANY