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

MADE IN GERMANY

**v1.0: 13. January, 2022**

# Audit

**Security Assessment**  
**15. January, 2022**

**For**



**VERSAL NFT**  
stay in eternity

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Version	Date	Description
1.0	15. January 2022	<ul style="list-style-type: none"><li>• Layout project</li><li>• Automated- /Manual-Security Testing</li><li>• Summary</li></ul>
1.1	16. January 2022	<ul style="list-style-type: none"><li>• Reaudit</li></ul>

## **Network**

Binance Smart Chain (BEP20)

## **Website**

<https://versalnft.com/>

## **Telegram**

<https://t.me/versalnft>

[https://t.me/versalnft\\_chat](https://t.me/versalnft_chat)

## **Twitter**

<https://twitter.com/VersalNFT>

## **Github**

<https://github.com/versalnft/smart-contracts>

## **Reddit**

<https://www.reddit.com/user/VersalNFT>

## **Medium**

<https://medium.com/@versalnft>

## Description

VersalNFT is a blockchain-based virtual legal space that contains a multi-user interface for creating, storing, and managing data. The basic function of the project is the ability to create a personal digital signature in NFT, containing information about the owner.

Versals (signature creators) will be able to sign documents for business or personal with its help. These documents, in turn, are minted into tokens and immortalized in the blockchain, and stored in crypto wallets. Information about the creator, signers, time, content is recorded in the token and protected from various kinds of manipulation. Using the Unlock protocol, access to content is provided only to signers or a limited number of persons.

The project has a set of rules that are consistent with English legal law. Thus, VersalNFT, using blockchain technology, provides the community with a connection between the crypto space and legal standards in the real world.

## Project Engagement

During the 13th of January 2022, **VersalNFT 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

- Testnet
  - VersalToken
    - <https://testnet.bscscan.com/address/0x0cbF2c0554fcBB527c27B19353f49A562dCAbcbE#code>
  - Vest
    - <https://testnet.bscscan.com/address/0x89f4d53f0486401bc8c97EE9F9aaFdb5F16bf6B9#code>

## v1.1

- Testnet
  - VersalToken
    - <https://testnet.bscscan.com/address/0x726A0e3293871a6571A30311B06edB0103c1A4A2#code>
  - Vest
    - <https://testnet.bscscan.com/address/0x20818728cA827C7d910b2a270c58F2C913235798#code>



# 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:

**v1.0**

VersalToken

Context  
Ownable  
IBEP20  
SafeMath  
Address  
BEP20  
Initializable

Vest

Context  
Ownable  
IBEP20

**v1.1**

Vest

Context  
Ownable  
IBEP20  
Address  
SafeBEP20

## 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

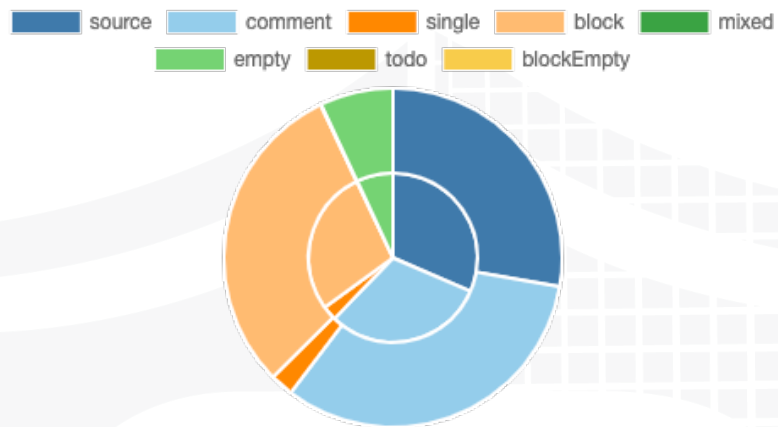
File Name	SHA-1 Hash
contracts/Vest.sol	c72ccc95cdb336ef77c4f9cdf5dd117ef4b566d8
contracts/VersalToken.sol	69ace2432933880913a1652cc35f01affb2f88db

### v1.1

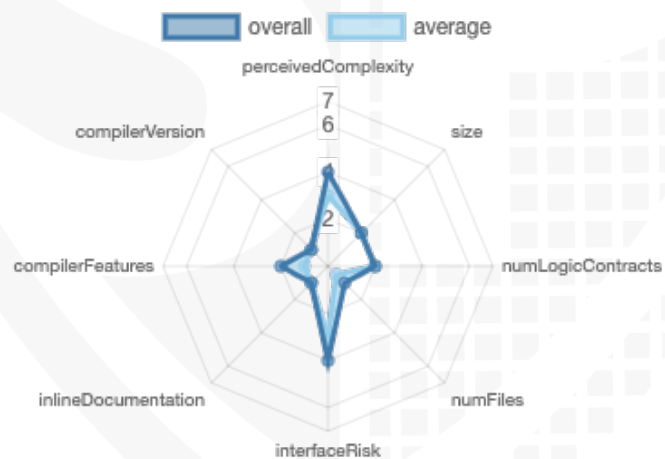
File Name	SHA-1 Hash
contracts/Vest.sol	3090b32bcc7fee60e7ebb22811ca4991b18db0d7
contracts/VersalToken.sol	b7392404e5708427db4a13479c2ad746eb0b9eae

# Metrics

## Source Lines v1.0



## Risk Level v1.0



## Capabilities

### Components

Version	Contracts	Libraries	Interfaces	Abstract
1.0	7	2	2	1
1.1	7	4	2	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	48	0

Version	External	Internal	Private	Pure	View
1.0	21	70	2	10	29
1.1	21	97	3	11	32

### State Variables

Version	Total	Public
1.0	38	28

### Capabilities

Version	Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
1.0	0.8.4 0.6.12			yes (3 asm blocks)	

Transfer s ETH	Low- Level Calls	Delega teCall	Uses Hash Functions	ERe cover	New/ Create/ Create2
yes		yes			



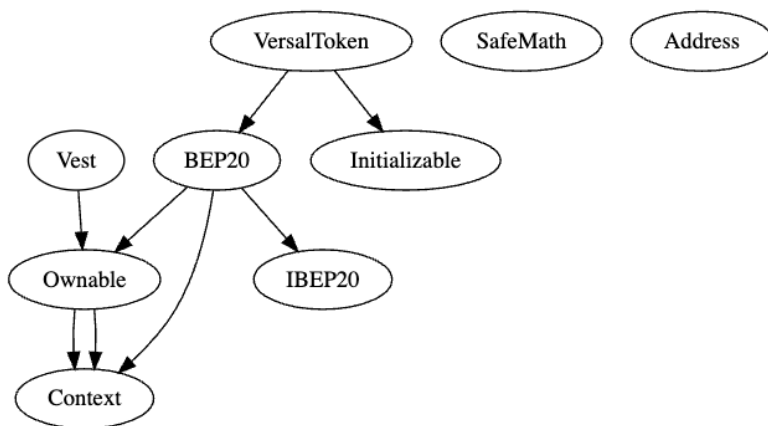
## Scope of Work

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).

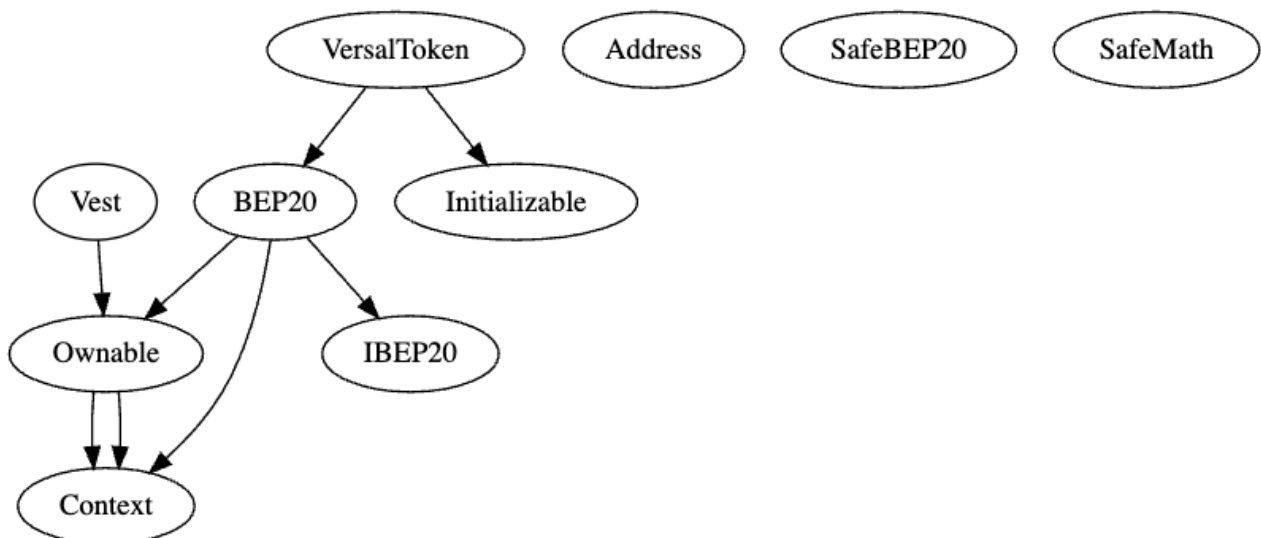
We will verify the following claims:

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)

## Inheritance Graph v1.0



## v1.1



## Verify Claims

### Correct implementation of Token standard

Tested	Verified
✓	✓

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

VersalToken

Vest

1. approve

2. decreaseAllowance

3. increaseAllowance

4. renounceOwnership

5. setVest

6. transact

7. transfer

8. transferFrom

9. transferOwnership

10. updateWallet

1. addPrivateWallet

2. claimPrivate

3. claimSeed

4. claimTeam

5. contractLock

6. initialize

7. renounceOwnership

8. transferOwnership



## Deployer cannot mint any new tokens

Name	Exist	Tested	Verified
Deployer cannot mint	✓	✓	✗

Max / Total Supply: -

Comments:

### v1.0

- Deployer can mint with transact function
  - If function called a percentage of the amount is sent out to addresses
    - Amount \* developPercent goes to development
    - Amount \* airDropPercent goes to airDrop
    - Amount \* presalePercent goes to presaleWallet
    - Amount \* idoPercent goes to idoWallet
    - Amount \* partnerPercent goes to partnersWallet
    - Amount \* 39.5e18 goes to vest
    - Amount \* marketingPercent goes to marketingWallet

## Deployer cannot burn or lock user funds

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

Comments:

### v1.0

- Deployer can lock claims in Vest for
  - Team
  - Seed
  - Private
- Deployer cannot lock user funds the VersalToken

## Deployer cannot pause the contract

Name	Exist	Tested	Verified
Deployer cannot pause	—	—	—



## Overall checkup (Smart Contract Security)

Tested	Verified
✓	✓

### Legend

Attribute	Symbol
Verified / Checked	✓
Partly Verified	⚠
Unverified / Not checked	✗
Not available	—

## Modifiers

- VersalToken
  - onlyOwner
    - setVest
    - updateWallet
    - transact
- Vest
  - onlyOwner
    - initialize
    - contractLock
  - isLock
    - claimSeed
    - claimTeam
    - claimPrivate
    - addPrivateWallet

## Comments

- While initializing the totalSupply amount of current address is multiplied by privatePercent (17e18) divided by 100e18. The result of this calculation is multiplied by 10/100 and will be send to privateWallet address.
  - Initialize function can be called without any limitations
- ClaimSeed, claimTeam, claimPrivate and addPrivateWallet can be called without any limitations also if there is a isLock modifier because there is a function which can set lockStatus without any limitations by the owner
- claimTeam
  - Can only called if
    - msg.sender is teamWallet
    - teamTime[msg.sender] == 0 or block.timestamp >= teamTime[msg.sender] + 30 days
    - claimCount[msg.sender] < 10
  - Team can only claim 10 times
  - Following amount will send to team address
    - uint amount = totalSupply \* teamPercent /100e18;
    - token.transfer(msg.sender,amount\*10/100);
- claimSeed
  - Can only called if
    - msg.sender is seedWallet
    - seedTime[msg.sender] == 0 or block.timestamp >= seedTime[msg.sender] + 30 days
    - claimCount[msg.sender] < 10
  - Seed address can only claim 10 times

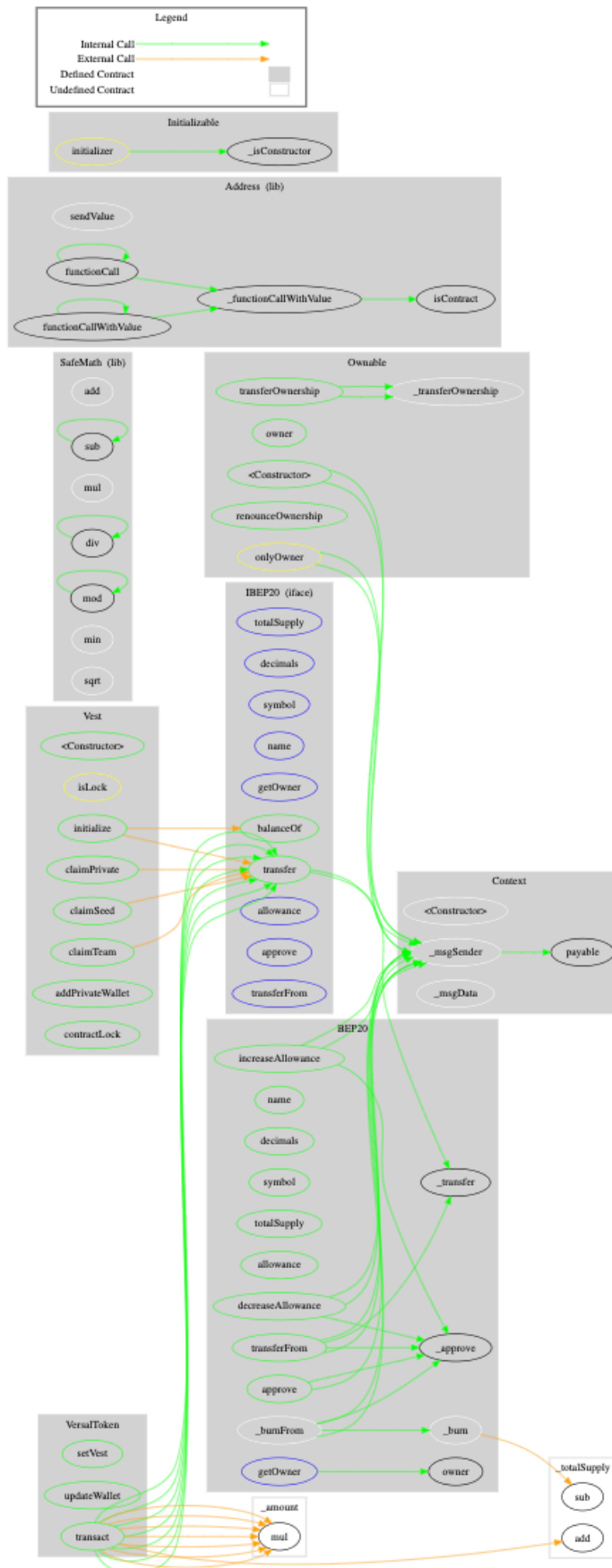
- Following amount will send to seed address
  - `uint amount = totalSupply * seedPercent / 100e18;`
  - `token.transfer(msg.sender, amount * 10 / 100);`

Keep it in mind, if deployer initialize new seed or team address it is possible to claim again 10 times each address

PrivateWallet can add new private details, but cannot be reverted



# CallGraph



## Source Units in Scope

### v1.0

Type	File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
	contracts/Vest.sol	3	1	298	219	144	111	113	
	contracts/VersalToken.sol	7	1	928	787	315	484	242	
	<b>Totals</b>	<b>10</b>	<b>2</b>	<b>1226</b>	<b>1006</b>	<b>459</b>	<b>595</b>	<b>355</b>	

### v1.1

Type	File	Logic Contracts	Interfaces	Lines	nLines	nSLOC	Comment Lines	Complex. Score	Capabilities
	contracts/Vest.sol	5	1	608	462	260	252	190	
	contracts/VersalToken.sol	7	1	935	794	323	484	257	
	<b>Totals</b>	<b>12</b>	<b>2</b>	<b>1543</b>	<b>1256</b>	<b>583</b>	<b>736</b>	<b>447</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

### Informational issues

Issue	File	Type	Line	Description
#1	VersalToken	State variables that could be declared constant (constable-states)	890, 888, 892, 889, 893, 891,	Add the `constant` attributes to state variables that never change
#2	Vest	State variables that could be declared constant (constable-states)	515, 516 514	Add the `constant` attributes to state variables that never change

## Commented Code exist

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

File	Line	Comment
VersalToken	329	// assert(a == b * c + a % b); // There is no case in which this doesn't hold

## Recommendation

Remove the commented code, or address them properly.

## Audit Comments

### 15. January 2022:

- Deployer can lock claims in Vest
- Read whole report for more information

### 16. January 2022:

- Reaudited contracts
  - Issues fixed

## 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>	<b>PASSED</b>
<a href="#">SW C-11 5</a>	Authorization through tx.origin	<a href="#">CWE-477: Use of Obsolete Function</a>	<b>PASSED</b>
<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>	<b>PASSED</b>
<a href="#">SW C-11 3</a>	DoS with Failed Call	<a href="#">CWE-703: Improper Check or Handling of Exceptional Conditions</a>	<b>PASSED</b>
<a href="#">SW C-11 2</a>	Delegatecall to Untrusted Callee	<a href="#">CWE-829: Inclusion of Functionality from Untrusted Control Sphere</a>	<b>PASSED</b>
<a href="#">SW C-11 1</a>	Use of Deprecated Solidity Functions	<a href="#">CWE-477: Use of Obsolete Function</a>	<b>PASSED</b>
<a href="#">SW C-11 0</a>	Assert Violation	<a href="#">CWE-670: Always-Incorrect Control Flow Implementation</a>	<b>PASSED</b>
<a href="#">SW C-1 09</a>	Uninitialized Storage Pointer	<a href="#">CWE-824: Access of Uninitialized Pointer</a>	<b>PASSED</b>
<a href="#">SW C-1 08</a>	State Variable Default Visibility	<a href="#">CWE-710: Improper Adherence to Coding Standards</a>	<b>PASSED</b>
<a href="#">SW C-1 07</a>	Reentrancy	<a href="#">CWE-841: Improper Enforcement of Behavioral Workflow</a>	<b>PASSED</b>
<a href="#">SW C-1 06</a>	Unprotected SELFDESTRUCT Instruction	<a href="#">CWE-284: Improper Access Control</a>	<b>PASSED</b>

<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>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 words "SolidProof" in a white, handwritten-style script. The "P" is large and stylized, with a long horizontal stroke that extends to the left. The background is a solid blue color with a faint, large shield emblem. The shield has a grid-like pattern on its right side and a solid blue area on its left side.

SolidProof

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

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

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