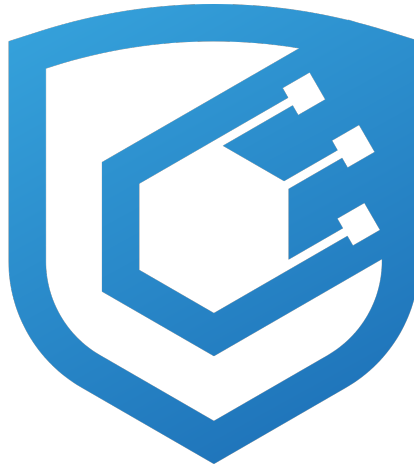


Protocol Audit Report
Chinaka Cornelius Chinedu (Nedster.eth)
March 29, 2025



Protocol Audit Report

Version 1.0

Chinaka Chinedu

March 29, 2025

Protocol Audit Report

Chinaka Cornelius Chinedu (Nedster.eth)

March 29, 2025

Prepared by: Chinedu Chinaka Lead Security Researcher: - Chinedu Chinaka

SOMETHING

Table of Contents

- SOMETHING
- Table of Contents
- Protocol Summary
- Disclaimer
- Risk Classification
- Audit Details
 - Scope
 - Roles
- Executive Summary
 - Issues found
 - Findings
 - High
 - * [H-1] Storing the password on-chain makes it visible to anyone, and no longer private
 - * [H-2] PasswordStore::setPassword has no access control, meaning a non-owner could change the password
 - Informational
 - * [I-1] PasswordStore::getPassword natspec indicates a parameter that doesn't exist, causing the natspec to be incorrect

Protocol Summary

PasswordStore is a protocol dedicated to storage and retrieval of a user's passwords. The protocol is designed to be used by a single user, and is not designed to be used by multiple users. Only the owner should be able to set and access this password.

Disclaimer

Chinedu Chinaka makes all effort to find as many vulnerabilities in the code in the given time period, but holds no responsibilities for the findings provided in this document. A security audit by the team is not an endorsement of the underlying business or product. The audit was time-boxed and the review of the code was solely on the security aspects of the Solidity implementation of the contracts.

Risk Classification

		Impact		
Likelihood	High	High	Medium	Low
	Medium	H	H/M	M
	Low	H/M	M	M/L
	Low	M	M/L	L

We use the CodeHawks severity matrix to determine severity. See the documentation for more details.

Audit Details

The findings in this document correspond the following commit hash:

5a5712a1a4490ffa708f04a6b52bd8dd4e71af9b

Scope

```
./src/  
#— PasswordStore.sol
```

Roles

- Owner: The user who can set the password and read the password.
- Outsides: No one else should be able to set or read the password.
-

Executive Summary

Add some notes about how the audit went, types of things you found, etc.

We spent X hours with Z auditors using Y tools. etc

Issues found

Severity	Number of issues found
High	2
Medium	0
Low	0
Info	1
Total	3

Findings

High

[H-1] Storing the password on-chain makes it visible to anyone, and no longer private

Description: All data stored on-chain is visible to anyone, and can be read directly from the blockchain. The `PasswordStore::s_password` variable is intended to be a private variable and only accessed through the `PasswordStore::getPassword` function, which is intended to be only called by the owner of the contract.

We show on such method of reading any data off chain below.

Impact: Anyone can read the private password, severely breaking the functionality of the protocol.

Proof of Concept:

The below test case shows how anyone can read the password directly from the blockchain.

1. Create a locally running chain

```
make anvil
```

2. Deploy the contract to the chain

```
make deploy
```

3. Run the storage tool

We use 1 because that's the storage slot of `s_password` in the contract.

```
cast storage <ADDRESS_HERE> 1 --rpc-url http://127.0.0.1:8545
```

You'll get an output that looks like this: `0x6d7950617373776f726400`

You can then parse that hex to a string with:

```
cast parse-bytes32-string 0x6d7950617373776f726400000000000000000000000000000000000000000000
```

And get an output of:

myPassword

Recommended Mitigation: Due to this, the overall architecture of the contract should be rethought. One could encrypt the password off-chain, and then store the encrypted password on-chain. This would require the user to remember another password off-chain to decrypt the password. However, you'd also likely want to remove the view function as you wouldn't want the user to accidentally send a transaction with the password that decrypts your password.

[H-2] PasswordStore::setPassword has no access control, meaning a non-owner could change the password

Description: The PasswordStore::setPassword function is set to be an external function, however, the natspec of the function and overall purpose of the smart contract is that This function allows only the owner to set a new password.

```
@> function setPassword(string memory newPassword) external {
    // @audit - There are no access controls
    s_password = newPassword;
    emit SetNewPassword();
}
```

Impact: Anyone can set/change the password of the contract, severely breaking the contract intended functionality.

Proof of Concept: Add the following to the PasswordStore.t.sol test file

Code

```
function test_anyone_can_set_password(address randomAddress) public {
    vm.assume(randomAddress != owner);
    vm.prank(randomAddress);
    string memory expectedPassword = "myNewPassword";
    passwordStore.setPassword(expectedPassword);

    vm.prank(owner);
    string memory actualPassword = passwordStore.getPassword();
    assertEq(actualPassword, expectedPassword);
}
```

Recommended Mitigation: Add an access control conditional to the setPassword function.

```
if(msg.sender != owner) {
    revert PasswordStore__NotOwner();
}
```

Informational

[I-1] PasswordStore::getPassword natspec indicates a parameter that doesn't exist, causing the natspec to be incorrect

Description:

```
/*
 * @notice This allows only the owner to retrieve the password.
 */
function getPassword() external view returns(string memory) {}
```

The PasswordStore::getPassword function signature is getPassword() which the natspec say it should be getPassword(string).

Impact: The natspec is incorrect.

Recommended Mitigation: Remove the incorrect natspec line.

— * @param newPassword the new password to set