



PasswordStore Audit Report

Version 0.1

Umesh.io

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Umesh1145

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Prepared by: Umesh1145

Assisting Auditors:

- None

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About Umesh

Web3 enthusiast and smart contract security researcher passionate about building secure and scalable dApps. Skilled in full-stack development with React.js, backend, and blockchain integration.

Risk Classification

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

Audit Details

The findings described in this document correspond the following commit hash:

```
1 2e8f81e263b3a9d18fab4fb5c46805ffc10a9990
```

Scope

```
1 src/  
2 --- PasswordStore.sol
```

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.

Roles

- Owner: Is the only one who should be able to set and access the password.

For this contract, only the owner should be able to interact with the contract.

Executive Summary

Issues found

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

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 is callable by anyone

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`.

```
1 function setPassword(string memory newPassword) external {
2   @> // @audit - There are no access controls here
3     s_password = newPassword;
4     emit SetNetPassword();
5 }
```

Impact: Anyone can set/change the password of the contract.

Proof of Concept:

Add the following to the `PasswordStore.t.sol` test suite.

```
1 function test_anyone_can_set_password(address randomAddress) public {
2   vm.prank(randomAddress);
3   string memory expectedPassword = "myNewPassword";
4   passwordStore.setPassword(expectedPassword);
5   vm.prank(owner);
6   string memory actualPassword = passwordStore.getPassword();
7   assertEq(actualPassword, expectedPassword);
8 }
```

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

```
1 if (msg.sender != s_owner) {
2   revert PasswordStore__NotOwner();
3 }
```

Low Risk Findings

L-01. Initialization Timeframe Vulnerability

Submitted by dianivanov.

Relevant GitHub Links

<https://github.com/Cyfrin/2023-10-PasswordStore/blob/main/src/PasswordStore.sol>

Summary

The PasswordStore contract exhibits an initialization timeframe vulnerability. This means that there is a period between contract deployment and the explicit call to setPassword during which the password remains in its default state. It's essential to note that even after addressing this issue, the password's public visibility on the blockchain cannot be entirely mitigated, as blockchain data is inherently public as already stated in the "Storing password in blockchain" vulnerability.

Vulnerability Details

The contract does not set the password during its construction (in the constructor). As a result, when the contract is initially deployed, the password remains uninitialized, taking on the default value for a string, which is an empty string.

During this initialization timeframe, the contract's password is effectively empty and can be considered a security gap.

Impact

The impact of this vulnerability is that during the initialization timeframe, the contract's password is left empty, potentially exposing the contract to unauthorized access or unintended behavior.

Tools Used

No tools used. It was discovered through manual inspection of the contract.

Recommendations

To mitigate the initialization timeframe vulnerability, consider setting a password value during the contract's deployment (in the constructor). This initial value can be passed in the constructor parameters.

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

```
1      /*
2      * @notice This allows only the owner to retrieve the password.
3  @>  * @param newPassword The new password to set.
4      */
5      function getPassword() external view returns (string memory)
```

The natspec for the function `PasswordStore::getPassword` indicates it should have a parameter with the signature `getPassword(string)`. However, the actual function signature is `getPassword()`.

Impact: The natspec is incorrect.

Recommended Mitigation: Remove the incorrect natspec line.

```
1  -      * @param newPassword The new password to set.
```