

Canary Smart Contract Audit Report



29 May 2021



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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain	
Canary	CNR	Avalanche	

Addresses

Contract address 0x8d88e48465f30acfb8dac0b3e35c9d6d7d36abaf		
Contract deployer address	0xDa17025e88c493184eBbBC1d281436725962dC49	

Project Website

https://canary.exchange/

Codebase

https://snowtrace.io/address/0x8d88e48465f30acfb8dac0b3e35c9d6d7d36abaf#code



SUMMARY

Canary is a decentralized finance (DeFi) which runs on Avalanche, the most promising and the fastest blockchain! Canary features a token which is called CNR Token that is the official token of the Canary and other Canary Ecosystem dApps. You earn CNR Token by using Canary.

Contract Summary

Documentation Quality

Canary provides a very good documentation with standard of solidity base code.

• The technical description is provided clearly and structured and also dont have any high risk issue.

Code Quality

The Overall quality of the basecode is standard.

• Standard solidity basecode and rules are already followed by Canary with the discovery of several low issues.

Test Coverage

Test coverage of the project is 100% (Through Codebase)

Audit Findings Summary

- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 11 and 203.
- SWC-120 | It is recommended to use external sources of randomness via oracles on lines 442 and 515.



CONCLUSION

We have audited the Canary project released in May 2021 to discover issues and identify potential security vulnerabilities in Canary Project. This process is used to find technical issues and security loopholes which might be found in the smart contract.

The security audit report provides satisfactory results with low-risk issues.

The issues found in the Canary smart contract code do not pose a considerable risk. The writing of the contract is close to the standard of writing contracts in general. The low-risk issues found are some a floating pragma is set and weak sources of randomness. Specifying a fixed compiler version is recommended to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code. The environment variable "block.number" looks like it might be used as a source of randomness. Note that the values of variables like coinbase, gaslimit, block number, and timestamp are predictable and can be manipulated by a malicious miner. Also, keep in mind that attackers know hashes of earlier blocks. Don't use any of those environment variables as sources of randomness, and be aware that using these variables introduces a certain level of trust in miners.



AUDIT RESULT

Article	Category	Description	Result	
Default Visibility	SWC-100 SWC-108	Functions and state variables visibility should be set explicitly. Visibility levels should be specified consciously.	PASS	
Integer Overflow and Underflow	SWC-101	If unchecked math is used, all math operations should be safe from overflows and underflows.	PASS	
Outdated Compiler Version	SWC-102	It is recommended to use a recent version of the Solidity compiler.	PASS	
Floating Pragma	SWC-103	Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly.	ISSUE FOUND	
Unchecked Call Return Value	SWC-104	The return value of a message call should be checked.	PASS	
Unprotected Ether Withdrawal	SWC-105	Due to missing or insufficient access controls, malicious parties can withdraw from the contract.	PASS	
SELFDESTRUCT Instruction	SWC-106	The contract should not be self-destructible while it has funds belonging to users.	it PASS	
Reentrancy	SWC-107	Check effect interaction pattern should be followed if the code performs recursive call.	PASS	
Uninitialized Storage Pointer	SWC-109	Uninitialized local storage variables can point to unexpected storage locations in the contract.	PASS	
Assert Violation	SWC-110 SWC-123	Properly functioning code should never reach a failing assert statement.	never reach a PASS	
Deprecated Solidity Functions	SWC-111	Deprecated built-in functions should never be used.	PASS	
Delegate call to Untrusted Callee	SWC-112	Delegatecalls should only be allowed to trusted addresses.	PASS	



DoS (Denial of Service)	SWC-113 SWC-128	Execution of the code should never be blocked by a specific contract state unless required.	PASS	
Race Conditions	SWC-114	Race Conditions and Transactions Order Dependency should not be possible.	ency PASS	
Authorization through tx.origin	SWC-115	tx.origin should not be used for authorization.	PASS	
Block values as a proxy for time	SWC-116	Block numbers should not be used for time calculations.	PASS	
Signature Unique ID	SWC-117 SWC-121 SWC-122	Signed messages should always have a unique id. A transaction hash should not be used as a unique id.	PASS	
Incorrect Constructor Name	SWC-118	Constructors are special functions that are called only once during the contract creation.	PASS	
Shadowing State Variable	SWC-119	State variables should not be shadowed.		
Weak Sources of Randomness	SWC-120	Random values should never be generated from Chain Attributes or be predictable.	ISSUE FOUND	
Write to Arbitrary Storage Location	SWC-124	The contract is responsible for ensuring that only authorized user or contract accounts may write to sensitive storage locations.		
Incorrect Inheritance Order	SWC-125	When inheriting multiple contracts, especially if they have identical functions, a developer should carefully specify inheritance in the correct order. The rule of thumb is to inherit contracts from more /general/ to more /specific/.		
Insufficient Gas Griefing	SWC-126	Insufficient gas griefing attacks can be performed on contracts which accept data and use it in a sub-call on another contract.		
Arbitrary Jump Function	SWC-127	As Solidity doesnt support pointer arithmetics, it is impossible to change such variable to an arbitrary value.	PASS	



Typographical Error	SWC-129	A typographical error can occur for example when the intent of a defined operation is to sum a number to a variable.		
Override control character	SWC-130	Malicious actors can use the Right-To-Left-Override unicode character to force RTL text rendering and confuse users as to the real intent of a contract.		
Unused variables	SWC-131 SWC-135	Unused variables are allowed in Solidity and they do not pose a direct security issue.	PASS	
Unexpected Ether balance	SWC-132	Contracts can behave erroneously when they strictly assume a specific Ether balance.		
Hash Collisions Variable	SWC-133	Using abi.encodePacked() with multiple variable length arguments can, in certain situations, lead to a hash collision.	PASS	
Hardcoded gas amount	SWC-134	The transfer() and send() functions forward a fixed amount of 2300 gas.		
Unencrypted Private Data	SWC-136	It is a common misconception that private type variables cannot be read.	PASS	





SMART CONTRACT ANALYSIS

Started	Friday May 28 2021 03:59:09 GMT+0000 (Coordinated Universal Time)		
Finished	Saturday May 29 2021 13:03:06 GMT+0000 (Coordinated Universal Time)		
Mode	Standard		
Main Source File	CNR.sol		

Detected Issues

ID	Title	Severity	Status
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-120	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.	low	acknowledged
SWC-120	POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.	low	acknowledged



SWC-103 | A FLOATING PRAGMA IS SET.

LINE 11

Iow SEVERITY

The current pragma Solidity directive is ""^0.5.16"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- CNR.sol

```
10
11 pragma solidity ^0.5.16;
12
13 // From https://github.com/OpenZeppelin/openzeppelin-
contracts/blob/master/contracts/math/Math.sol
14 // Subject to the MIT license.
15
```





SWC-103 | A FLOATING PRAGMA IS SET.

LINE 203

Iow SEVERITY

The current pragma Solidity directive is ""^0.5.16"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- CNR.sol

```
202
203 pragma solidity ^0.5.16;
204 pragma experimental ABIEncoderV2;
205 contract CNR {
206 /// @notice EIP-20 token name for this token
207
```



SWC-120 | POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.

LINE 442

Iow SEVERITY

The environment variable "block.number" looks like it might be used as a source of randomness. Note that the values of variables like coinbase, gaslimit, block number and timestamp are predictable and can be manipulated by a malicious miner. Also keep in mind that attackers know hashes of earlier blocks. Don't use any of those environment variables as sources of randomness and be aware that use of these variables introduces a certain level of trust into miners.

Source File

- CNR.sol

```
441 function getPriorVotes(address account, uint blockNumber) public view returns
(uint96) {
442 require(blockNumber < block.number, "CNR::getPriorVotes: not yet determined");
443
444 uint32 nCheckpoints = numCheckpoints[account];
445 if (nCheckpoints == 0) {
446</pre>
```





SWC-120 | POTENTIAL USE OF "BLOCK.NUMBER" AS SOURCE OF RANDOMNESS.

LINE 515

Iow SEVERITY

The environment variable "block.number" looks like it might be used as a source of randomness. Note that the values of variables like coinbase, gaslimit, block number and timestamp are predictable and can be manipulated by a malicious miner. Also keep in mind that attackers know hashes of earlier blocks. Don't use any of those environment variables as sources of randomness and be aware that use of these variables introduces a certain level of trust into miners.

Source File

- CNR.sol

```
514 function _writeCheckpoint(address delegatee, uint32 nCheckpoints, uint96 oldVotes,
uint96 newVotes) internal {
515 uint32 blockNumber = safe32(block.number, "CNR::_writeCheckpoint: block number
exceeds 32 bits");
516
517 if (nCheckpoints > 0 && checkpoints[delegatee][nCheckpoints - 1].fromBlock ==
blockNumber) {
518 checkpoints[delegatee][nCheckpoints - 1].votes = newVotes;
519
```



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This is a limited report on our findings based on our analysis, in accordance with good industry practice as of the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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Sysfixed is a blockchain security certification organization established in 2021 with the objective to provide smart contract security services and verify their correctness in blockchain-based protocols. Sysfixed automatically scans for security vulnerabilities in Ethereum and other EVM-based blockchain smart contracts. Sysfixed a comprehensive range of analysis techniques—including static analysis, dynamic analysis, and symbolic execution—can accurately detect security vulnerabilities to provide an in-depth analysis report. With a vibrant ecosystem of world-class integration partners that amplify developer productivity, Sysfixed can be utilized in all phases of your project's lifecycle. Our team of security experts is dedicated to the research and improvement of our tools and techniques used to fortify your code.