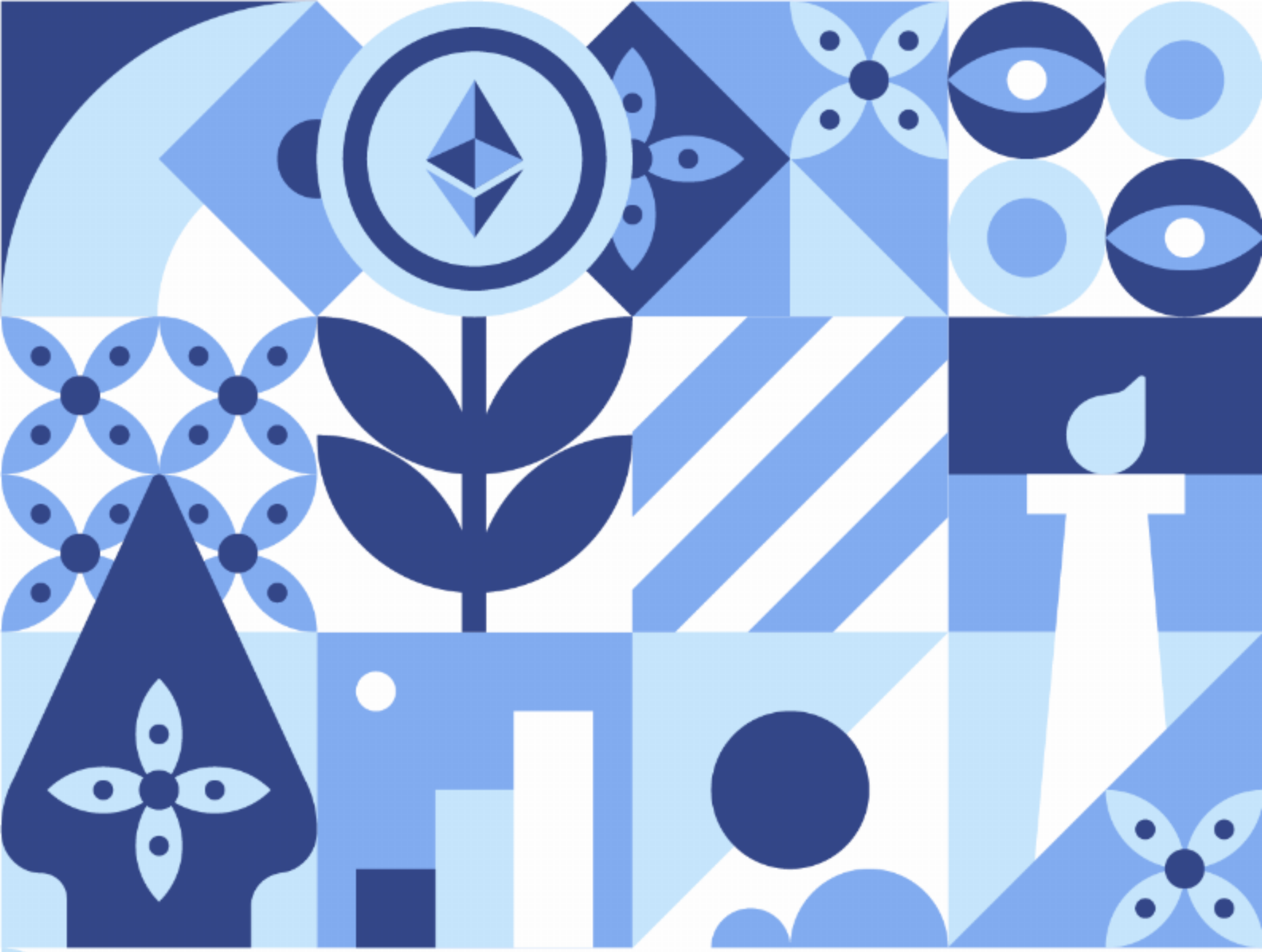

Datarius Credit

Smart Contract Audit Report

SYSFIXED

03 Feb 2018

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
Datarius Credit	DTRC	Ethereum

Addresses

Contract address	0xc20464e0c373486d2b3335576e83a218b1618a5e
Contract deployer address	0xB80FC93f95857A30226Ff4399Ef108Dc0BD5ccC1

Project Website

https://datarius.io/

Codebase

https://etherscan.io/address/0xc20464e0c373486d2b3335576e83a218b1618a5e#code

SUMMARY

Datarius is the first social P2P cryptobank. Our main goal is to demonstrate that fintech can be completely different. We decided not to impose any services to users. We will provide three listings with the different trust levels – from the borrowers minimally verified by the system algorithms and to the completely transparent borrowers, thoroughly reviewed by the project's Risk Department. Any interested user, at any time, can personally order one or another related service – in-depth computer evaluation, evaluation by project partners, evaluation by the Risk Department, evaluation by user-managers. The results will be immediately available to all other users. Accordingly, one or another application can automatically shift from one listing to another in keeping with the wishes of the project participants, and not merely as preferred by the submitting user. Thus, Datarius provides its users with complete freedom of choice both in terms of actions and cost.

Contract Summary

Documentation Quality

Datarius Credit 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 Datarius Credit with the discovery of several low issues.

Test Coverage

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

Audit Findings Summary

- SWC-100 SWC-108 | Explicitly define visibility for all state variables on lines 55, 56, 57, 58, 59, 136, 206, 52 and 53.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 7.
- SWC-110 SWC-123 | It is recommended to use of revert(), assert(), and require() in Solidity, and the new REVERT opcode in the EVM on lines 33 and 39.
- SWC-111 | It is recommended to use alternatives to the deprecated constructions on lines 16, 25, 32, 37, 55, 59, 136 and 206.

CONCLUSION

We have audited the Datarius Credit project released on February 2018 to discover issues and identify potential security vulnerabilities in Datarius Credit 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 a satisfactory result with some low-risk issues.

The issues found in the Datarius Credit 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 a floating pragma is set, a state variable visibility is not set, an assertion violation is triggered and the use of "constant" state mutability that has been deprecated. It is recommended to use alternatives to the deprecated constructions.

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.	ISSUE FOUND
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.	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.	ISSUE FOUND
Deprecated Solidity Functions	SWC-111	Deprecated built-in functions should never be used.	ISSUE FOUND
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.	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.	PASS
Weak Sources of Randomness	SWC-120	Random values should never be generated from Chain Attributes or be predictable.	PASS
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.	PASS
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/.	PASS
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.	PASS
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.	PASS
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.	PASS
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.	PASS
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.	PASS
Unencrypted Private Data	SWC-136	It is a common misconception that private type variables cannot be read.	PASS

SMART CONTRACT ANALYSIS

Started	Friday Feb 02 2018 21:44:16 GMT+0000 (Coordinated Universal Time)
Finished	Saturday Feb 03 2018 21:46:47 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	DatariusToken.sol

Detected Issues

ID	Title	Severity	Status
SWC-100	FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)	low	acknowledged
SWC-100	FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)	low	acknowledged
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SWC-100	FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged

SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-110	AN ASSERTION VIOLATION WAS TRIGGERED.	low	acknowledged
SWC-110	AN ASSERTION VIOLATION WAS TRIGGERED.	low	acknowledged
SWC-111	USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.	low	acknowledged
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SWC-111	USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.	low	acknowledged

SWC-100 | FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)

LINE 55

low SEVERITY

The function definition of "balanceOf" lacks a visibility specifier. Note that the compiler assumes "public" visibility by default. Function visibility should always be specified explicitly to assure correctness of the code and improve readability.

Source File

- DatariusToken.sol

Locations

```
54
55   function balanceOf(address _owner) constant returns (uint);
56   function transfer(address _to, uint _value) returns (bool);
57   function transferFrom(address _from, address _to, uint _value) returns (bool);
58   function approve(address _spender, uint _value) returns (bool);
59
```

SWC-100 | FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)

LINE 56

low SEVERITY

The function definition of "transfer" lacks a visibility specifier. Note that the compiler assumes "public" visibility by default. Function visibility should always be specified explicitly to assure correctness of the code and improve readability.

Source File

- DatariusToken.sol

Locations

```
55   function balanceOf(address _owner) constant returns (uint);
56   function transfer(address _to, uint _value) returns (bool);
57   function transferFrom(address _from, address _to, uint _value) returns (bool);
58   function approve(address _spender, uint _value) returns (bool);
59   function allowance(address _owner, address _spender) constant returns (uint);
60
```

SWC-100 | FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)

LINE 57

low SEVERITY

The function definition of "transferFrom" lacks a visibility specifier. Note that the compiler assumes "public" visibility by default. Function visibility should always be specified explicitly to assure correctness of the code and improve readability.

Source File

- DatariusToken.sol

Locations

```
56   function transfer(address _to, uint _value) returns (bool);
57   function transferFrom(address _from, address _to, uint _value) returns (bool);
58   function approve(address _spender, uint _value) returns (bool);
59   function allowance(address _owner, address _spender) constant returns (uint);
60
61
```

SWC-100 | FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)

LINE 58

low SEVERITY

The function definition of "approve" lacks a visibility specifier. Note that the compiler assumes "public" visibility by default. Function visibility should always be specified explicitly to assure correctness of the code and improve readability.

Source File

- DatariusToken.sol

Locations

```
57   function transferFrom(address _from, address _to, uint _value) returns (bool);
58   function approve(address _spender, uint _value) returns (bool);
59   function allowance(address _owner, address _spender) constant returns (uint);
60
61   event Transfer(address indexed _from, address indexed _to, uint _value);
62
```

SWC-100 | FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)

LINE 59

low SEVERITY

The function definition of "allowance" lacks a visibility specifier. Note that the compiler assumes "public" visibility by default. Function visibility should always be specified explicitly to assure correctness of the code and improve readability.

Source File

- DatariusToken.sol

Locations

```
58   function approve(address _spender, uint _value) returns (bool);
59   function allowance(address _owner, address _spender) constant returns (uint);
60
61   event Transfer(address indexed _from, address indexed _to, uint _value);
62   event Approval(address indexed _owner, address indexed _spender, uint _value);
63
```

SWC-100 | FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)

LINE 136

low SEVERITY

The function definition of "balanceOf" lacks a visibility specifier. Note that the compiler assumes "public" visibility by default. Function visibility should always be specified explicitly to assure correctness of the code and improve readability.

Source File

- DatariusToken.sol

Locations

```
135   */
136   function balanceOf(address _holder) constant returns (uint) {
137   return balances[_holder];
138   }
139
140
```

SWC-100 | FUNCTION VISIBILITY IS NOT SET (PRIOR TO SOLIDITY 0.5.0)

LINE 206

low SEVERITY

The function definition of "allowance" lacks a visibility specifier. Note that the compiler assumes "public" visibility by default. Function visibility should always be specified explicitly to assure correctness of the code and improve readability.

Source File

- DatariusToken.sol

Locations

```
205   */
206   function allowance(address _owner, address _spender) constant returns (uint) {
207   return allowed[_owner][_spender];
208   }
209   }
210
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 7

low SEVERITY

The current pragma Solidity directive is ""^0.4.15"". 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

- DatariusToken.sol

Locations

```
6   // Developed by Phenom.Team <info@phenom.team>
7   pragma solidity ^0.4.15;
8
9   /**
10   *   @title SafeMath
11
```

SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 52

low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "balances" is internal. Other possible visibility settings are public and private.

Source File

- DatariusToken.sol

Locations

```
51
52   mapping(address => uint) balances;
53   mapping(address => mapping (address => uint)) allowed;
54
55   function balanceOf(address _owner) constant returns (uint);
56
```

SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 53

low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "allowed" is internal. Other possible visibility settings are public and private.

Source File

- DatariusToken.sol

Locations

```
52   mapping(address => uint) balances;
53   mapping(address => mapping (address => uint)) allowed;
54
55   function balanceOf(address _owner) constant returns (uint);
56   function transfer(address _to, uint _value) returns (bool);
57
```

SWC-110 | AN ASSERTION VIOLATION WAS TRIGGERED.

LINE 33

low SEVERITY

It is possible to cause an assertion violation. Note that Solidity assert() statements should only be used to check invariants. Review the transaction trace generated for this issue and either make sure your program logic is correct, or use require() instead of assert() if your goal is to constrain user inputs or enforce preconditions. Remember to validate inputs from both callers (for instance, via passed arguments) and callees (for instance, via return values).

Source File

- DatariusToken.sol

Locations

```
32   function sub(uint a, uint b) internal constant returns(uint) {
33   assert(b <= a);
34   return a - b;
35   }
36
37
```

SWC-110 | AN ASSERTION VIOLATION WAS TRIGGERED.

LINE 39

low SEVERITY

It is possible to cause an assertion violation. Note that Solidity assert() statements should only be used to check invariants. Review the transaction trace generated for this issue and either make sure your program logic is correct, or use require() instead of assert() if your goal is to constrain user inputs or enforce preconditions. Remember to validate inputs from both callers (for instance, via passed arguments) and callees (for instance, via return values).

Source File

- DatariusToken.sol

Locations

```
38   uint c = a + b;
39   assert(c >= a);
40   return c;
41   }
42   }
43
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 16

low SEVERITY

Using "constant" as a state mutability modifier in function "mul" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DatariusToken.sol

Locations

```
15
16   function mul(uint a, uint b) internal constant returns (uint) {
17   if (a == 0) {
18   return 0;
19   }
20
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 25

low SEVERITY

Using "constant" as a state mutability modifier in function "div" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DatariusToken.sol

Locations

```
24
25   function div(uint a, uint b) internal constant returns(uint) {
26   assert(b > 0);
27   uint c = a / b;
28   assert(a == b * c + a % b);
29
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 32

low SEVERITY

Using "constant" as a state mutability modifier in function "sub" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DatariusToken.sol

Locations

```
31
32   function sub(uint a, uint b) internal constant returns(uint) {
33   assert(b <= a);
34   return a - b;
35   }
36
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 37

low SEVERITY

Using "constant" as a state mutability modifier in function "add" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DatariusToken.sol

Locations

```
36
37   function add(uint a, uint b) internal constant returns(uint) {
38   uint c = a + b;
39   assert(c >= a);
40   return c;
41
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 55

low SEVERITY

Using "constant" as a state mutability modifier in function "balanceOf" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DatariusToken.sol

Locations

```
54
55   function balanceOf(address _owner) constant returns (uint);
56   function transfer(address _to, uint _value) returns (bool);
57   function transferFrom(address _from, address _to, uint _value) returns (bool);
58   function approve(address _spender, uint _value) returns (bool);
59
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 59

low SEVERITY

Using "constant" as a state mutability modifier in function "allowance" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DatariusToken.sol

Locations

```
58   function approve(address _spender, uint _value) returns (bool);
59   function allowance(address _owner, address _spender) constant returns (uint);
60
61   event Transfer(address indexed _from, address indexed _to, uint _value);
62   event Approval(address indexed _owner, address indexed _spender, uint _value);
63
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 136

low SEVERITY

Using "constant" as a state mutability modifier in function "balanceOf" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DatariusToken.sol

Locations

```
135   */
136   function balanceOf(address _holder) constant returns (uint) {
137   return balances[_holder];
138   }
139
140
```

SWC-111 | USE OF THE "CONSTANT" STATE MUTABILITY MODIFIER IS DEPRECATED.

LINE 206

low SEVERITY

Using "constant" as a state mutability modifier in function "allowance" is disallowed as of Solidity version 0.5.0. Use "view" instead.

Source File

- DatariusToken.sol

Locations

```
205   */
206   function allowance(address _owner, address _spender) constant returns (uint) {
207   return allowed[_owner][_spender];
208   }
209   }
210
```

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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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