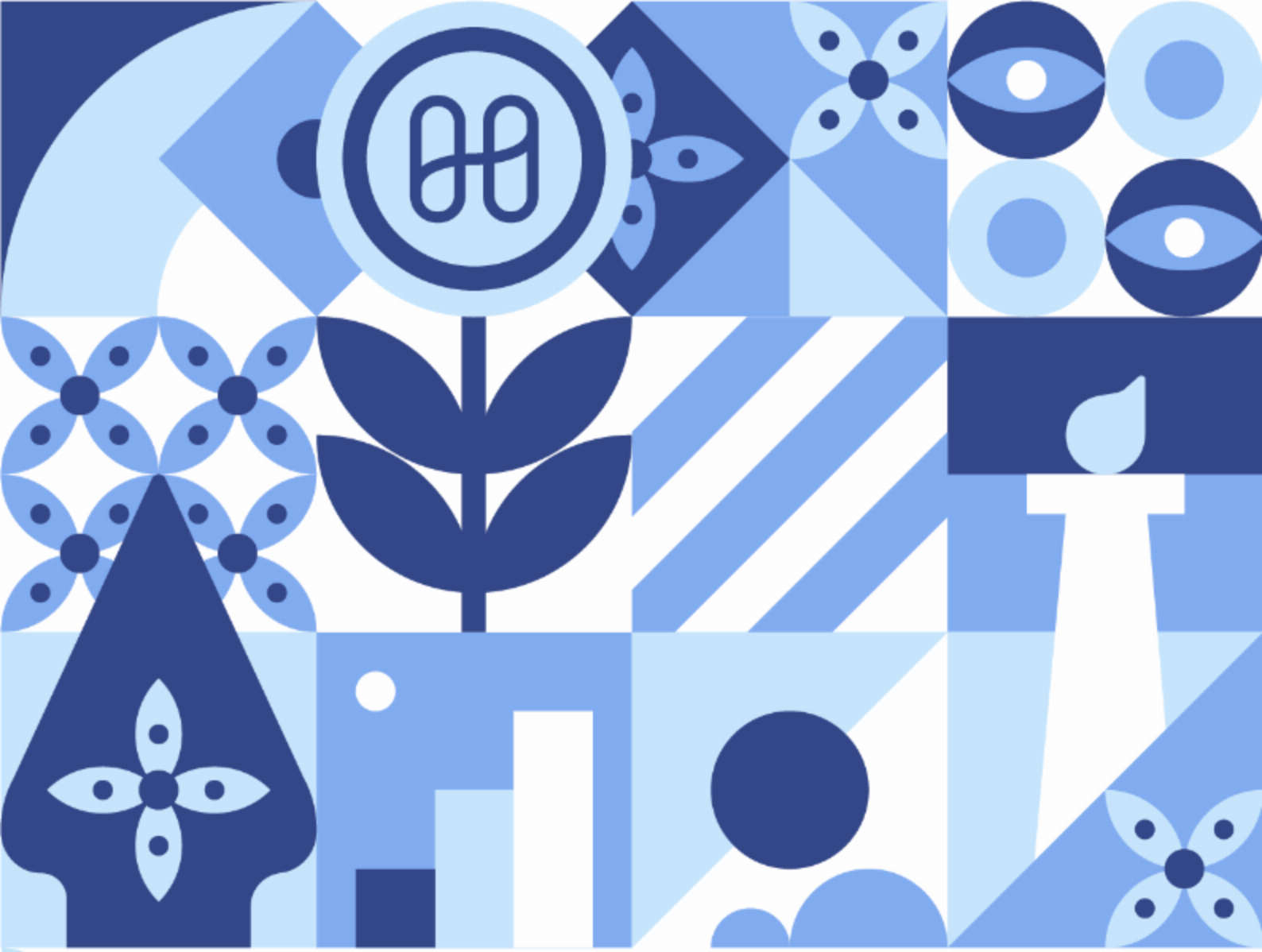

Cougar Token

Smart Contract Audit Report

SYSFIXED

10 Oct 2021

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
Cougar Token	CGS	Harmony

Addresses

Contract address	0x6cc35220349c444c39b8e26b359757739aaec952
Contract deployer address	0x75c630F22298C20AAeEb1592639d29E325Bee91D

Project Website

https://cougarswap.io/

Codebase

https://explorer.harmony.one/address/0x6cc35220349c444c39b8e26b359757739aaec952?activeTab=7

SUMMARY

The Cougar token (CGS) is a multi-chain compatible utility token structured for Cougar Ecosystem. The principle to the deployment of CougarSwap is the fact that all liquidity pairs exchange tokens with $CGS tokens. This design determination makes full use of the absolute on-chain advantages that allow for sub-transfer of value across chains and provide larger liquidity for the whole ecosystem and brings the most profitable investment solutions within networks.

Contract Summary

Documentation Quality

Cougar Token provides a very poor documentation with standard of solidity base code.

- The technical description is provided unclear and disorganized.

Code Quality

The Overall quality of the basecode is poor.

- Solidity basecode and rules are unclear and disorganized by Cougar Token.

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 5, 28, 94, 107, 204, 417, 606, 925, 1023, 1069 and 1124.
- SWC-116 | It is recommended to use oracles for block values as a proxy for time on lines 1429.
- SWC-120 | It is recommended to use external sources of randomness via oracles on lines 1459, 1532 and 1459.
- SWC-127 | A developer should not allow a user to assign arbitrary values to function type variables on lines 814.

CONCLUSION

We have audited the Cougar Token project released in October 2021 to find issues and identify potential security vulnerabilities in the Cougar Token project. This process is used to find technical issues and security loopholes that may be found in smart contracts.

The security audit report yielded unsatisfactory results, discovering high-risk and low-risk issues.

Writing a contract that does not follow the Solidity style guide can pose a significant risk. The serious and low problems we found in the smart contract are the caller can redirect execution to arbitrary bytecode locations., and low-risk issues are some a floating pragma is set, floating pragma is set, control flow decision is made based on The block.timestamp environment variable, and control flow decision is made based on The block.timestamp environment variable. It is possible to redirect the control flow to arbitrary locations in the code. This may allow an attacker to bypass security controls or manipulate the business logic of the smart contract. Avoid using low-level operations and assembly to prevent this issue. A floating pragma is set, and the current pragma Solidity directive is "">=0.6.2"". 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. The block.number environment variable is used to determine a control flow decision. 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 the use of these variables introduces a certain level of trust into miners.

We were recommended to keep being aware of investing in this risky smart contract.

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.	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.	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.	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.	ISSUE FOUND
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.	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.	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.	ISSUE FOUND

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	Saturday Oct 09 2021 16:06:07 GMT+0000 (Coordinated Universal Time)
Finished	Sunday Oct 10 2021 03:50:35 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	CougarToken.sol

Detected Issues

ID	Title	Severity	Status
SWC-127	THE CALLER CAN REDIRECT EXECUTION TO ARBITRARY BYTECODE LOCATIONS.	high	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
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SWC-116	A CONTROL FLOW DECISION IS MADE BASED ON THE BLOCK.TIMESTAMP ENVIRONMENT VARIABLE.	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-120	A CONTROL FLOW DECISION IS MADE BASED ON THE BLOCK.NUMBER ENVIRONMENT VARIABLE.	low	acknowledged

SWC-127 | THE CALLER CAN REDIRECT EXECUTION TO ARBITRARY BYTECODE LOCATIONS.

LINE 814

high SEVERITY

It is possible to redirect the control flow to arbitrary locations in the code. This may allow an attacker to bypass security controls or manipulate the business logic of the smart contract. Avoid using low-level-operations and assembly to prevent this issue.

Source File

- CougarToken.sol

Locations

```
813   */
814   function mint(uint256 amount) public onlyOwner returns (bool) {
815   _mint(_msgSender(), amount);
816   return true;
817   }
818
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 5

low SEVERITY

The current pragma Solidity directive is ""=0.6.0<0.8.0"". 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

- CougarToken.sol

Locations

```
4
5   pragma solidity >=0.6.0 <0.8.0;
6
7   /*
8   * @dev Provides information about the current execution context, including the
9
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 28

low SEVERITY

The current pragma Solidity directive is ""=0.6.0<0.8.0"". 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

- CougarToken.sol

Locations

```
27
28   pragma solidity >=0.6.0 <0.8.0;
29
30   /**
31   * @dev Contract module which provides a basic access control mechanism, where
32
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 94

low SEVERITY

The current pragma Solidity directive is ""=0.6.0<0.8.0"". 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

- CougarToken.sol

Locations

```
93
94   pragma solidity >=0.6.0 <0.8.0;
95
96   /*
97   * @dev Provides information about the current execution context, including the
98
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 107

low SEVERITY

The current pragma Solidity directive is ""^0.4.0"". 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

- CougarToken.sol

Locations

```
106
107   pragma solidity ^0.4.0;
108
109   interface IBEP20 {
110   /**
111
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 204

low SEVERITY

The current pragma Solidity directive is ""=0.6.0<0.8.0"". 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

- CougarToken.sol

Locations

```
203
204   pragma solidity >=0.6.0 <0.8.0;
205
206   /**
207   * @dev Wrappers over Solidity's arithmetic operations with added overflow
208
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 417

low SEVERITY

The current pragma Solidity directive is ""=0.6.2<0.8.0"". 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

- CougarToken.sol

Locations

```
416
417   pragma solidity >=0.6.2 <0.8.0;
418
419   /**
420   * @dev Collection of functions related to the address type
421
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 606

low SEVERITY

The current pragma Solidity directive is ""^0.4.0"". 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

- CougarToken.sol

Locations

```
605
606   pragma solidity ^0.4.0;
607
608
609
610
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 925

low SEVERITY

The current pragma Solidity directive is ""^0.6.2"". 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

- CougarToken.sol

Locations

```
924
925   pragma solidity ^0.6.2;
926
927   interface IUniswapV2Router01 {
928   function factory() external pure returns (address);
929
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1023

low SEVERITY

The current pragma Solidity directive is ""^0.6.2"". 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

- CougarToken.sol

Locations

```
1022
1023   pragma solidity ^0.6.2;
1024
1025
1026   interface IUniswapV2Router02 is IUniswapV2Router01 {
1027
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1069

low SEVERITY

The current pragma Solidity directive is ""^0.5.0"". 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

- CougarToken.sol

Locations

```
1068
1069   pragma solidity ^0.5.0;
1070
1071   interface IUniswapV2Pair {
1072   event Approval(address indexed owner, address indexed spender, uint value);
1073
```

SWC-103 | A FLOATING PRAGMA IS SET.

LINE 1124

low SEVERITY

The current pragma Solidity directive is ""^0.5.0"". 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

- CougarToken.sol

Locations

```
1123
1124   pragma solidity ^0.5.0;
1125
1126   interface IUniswapV2Factory {
1127   event PairCreated(address indexed token0, address indexed token1, address pair,
uint);
1128
```

SWC-116 | A CONTROL FLOW DECISION IS MADE BASED ON THE BLOCK.TIMESTAMP ENVIRONMENT VARIABLE.

LINE 1429

low SEVERITY

The block.timestamp environment variable is used to determine a control flow decision. 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

- CougarToken.sol

Locations

```
1428   require(nonce == nonces[signatory]++, "COUGAR::delegateBySig: invalid nonce");
1429   require(now <= expiry, "COUGAR::delegateBySig: signature expired");
1430   return _delegate(signatory, delegatee);
1431   }
1432
1433
```

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

LINE 1459

low 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

- CougarToken.sol

Locations

```
1458   {
1459   require(blockNumber < block.number, "COUGAR::getPriorVotes: not yet determined");
1460
1461   uint32 nCheckpoints = numCheckpoints[account];
1462   if (nCheckpoints == 0) {
1463
```

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

LINE 1532

low 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

- CougarToken.sol

Locations

```
1531   {
1532   uint32 blockNumber = safe32(block.number, "COUGAR::_writeCheckpoint: block number
exceeds 32 bits");
1533
1534   if (nCheckpoints > 0 && checkpoints[delegatee][nCheckpoints - 1].fromBlock ==
blockNumber) {
1535   checkpoints[delegatee][nCheckpoints - 1].votes = newVotes;
1536
```

SWC-120 | A CONTROL FLOW DECISION IS MADE BASED ON THE BLOCK.NUMBER ENVIRONMENT VARIABLE.

LINE 1459

low SEVERITY

The block.number environment variable is used to determine a control flow decision. 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

- CougarToken.sol

Locations

```
1458   {
1459   require(blockNumber < block.number, "COUGAR::getPriorVotes: not yet determined");
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1461   uint32 nCheckpoints = numCheckpoints[account];
1462   if (nCheckpoints == 0) {
1463
```

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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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