Cyberscope

Audit Report

GOIN

August 2024

Network BASE

Address 0x902bed84297dcc988a106d9c321dc2b682b84116

Audited by © cyberscope

Analysis

Critical Medium Minor / Informative Pass

Severity	Code	Description	Status
●	ST	Stops Transactions	Passed
●	OTUT	Transfers User's Tokens	Passed
●	ELFM	Exceeds Fees Limit	Passed
●	MT	Mints Tokens	Passed
●	BT	Burns Tokens	Passed
●	BC	Blacklists Addresses	Passed

Diagnostics

Critical Medium Minor / Informative

Severity	Code	Description	Status
	CR	Code Repetition	Unresolved
	IDI	Immutable Declaration Improvement	Unresolved
	MEE	Missing Events Emission	Unresolved
	MU	Modifiers Usage	Unresolved
	L04	Conformance to Solidity Naming Conventions	Unresolved
	L16	Validate Variable Setters	Unresolved
	L19	Stable Compiler Version	Unresolved
	L22	Potential Locked Ether	Unresolved

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Risk Classification

The criticality of findings in Cyberscope's smart contract audits is determined by evaluating multiple variables. The two primary variables are:

1. **Likelihood of Exploitation**: This considers how easily an attack can be executed, including the economic feasibility for an attacker.
2. **Impact of Exploitation**: This assesses the potential consequences of an attack, particularly in terms of the loss of funds or disruption to the contract's functionality.

Based on these variables, findings are categorized into the following severity levels:

1. **Critical**: Indicates a vulnerability that is both highly likely to be exploited and can result in significant fund loss or severe disruption. Immediate action is required to address these issues.
2. **Medium**: Refers to vulnerabilities that are either less likely to be exploited or would have a moderate impact if exploited. These issues should be addressed in due course to ensure overall contract security.
3. **Minor**: Involves vulnerabilities that are unlikely to be exploited and would have a minor impact. These findings should still be considered for resolution to maintain best practices in security.
4. **Informative**: Points out potential improvements or informational notes that do not pose an immediate risk. Addressing these can enhance the overall quality and robustness of the contract.

Severity	Likelihood / Impact of Exploitation
Critical	Highly Likely / High Impact
Medium	Less Likely / High Impact or Highly Likely/ Lower Impact
Minor / Informative	Unlikely / Low to no Impact

Review

Contract Name	Gamster
Compiler Version	v0.8.26+commit.8a97fa7a
Optimization	200 runs
Explorer	https://basescan.org/address/0x902bed84297dcc988a106d9c321dc2b682b84116
Address	0x902bed84297dcc988a106d9c321dc2b682b84116
Network	BASE
Symbol	GOIN
Decimals	18
Total Supply	1,000,000,000

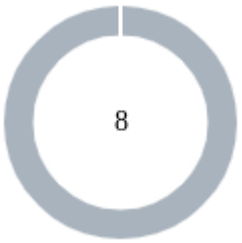
Audit Updates

Initial Audit	26 Aug 2024

Source Files

Filename	SHA256
Gamster.sol	6491cb3ab2e3242475dbc654133466ef7319bce2ed823d8503f83a49dcf0c5df

Findings Breakdown



Critical	0
Medium	0
Minor / Informative	8

Severity	Unresolved	Acknowledged	Resolved	Other
Critical	0	0	0	0
Medium	0	0	0	0
Minor / Informative	8	0	0	0

CR - Code Repetition

Criticality	Minor / Informative
Location	Gamster.sol#L67,82
Status	Unresolved

Description

The contract contains repetitive code segments. There are potential issues that can arise when using code segments in Solidity. Some of them can lead to issues like gas efficiency, complexity, readability, security, and maintainability of the source code. It is generally a good idea to try to minimize code repetition where possible. In this case, both transfer and transferFrom functions implement the same transfer mechanism.

```
function transfer(address to, uint tokens) public override
returns (bool success) {
        ...
        require(balances[msg.sender] >= tokens, "ERC20:
insufficient balance");
        balances[msg.sender] -= tokens;
        balances[to] += tokens;
        ...
    }
```

```
function transferFrom(address from, address to, uint tokens)
public override returns (bool success) {
        ...
        require(balances[from] >= tokens, "ERC20: insufficient
balance");
        ...
        balances[from] -= tokens;
        ...
        balances[to] += tokens;
        ...
    }
```

Recommendation

The team is advised to avoid repeating the same code in multiple places, which can make the contract easier to read and maintain. The authors could try to reuse code wherever possible, as this can help reduce the complexity and size of the contract. For instance, the contract could reuse the common code segments in an internal function in order to avoid repeating the same code in multiple places.

IDI - Immutable Declaration Improvement

Criticality	Minor / Informative
Location	Gamster.sol#L57,58
Status	Unresolved

Description

The contract declares state variables that their value is initialized once in the constructor and are not modified afterwards. The `immutable` is a special declaration for this kind of state variables that saves gas when it is defined.

```
decimals
totalSupply
```

Recommendation

By declaring a variable as immutable, the Solidity compiler is able to make certain optimizations. This can reduce the amount of storage and computation required by the contract, and make it more gas-efficient.

MEE - Missing Events Emission

Criticality	Minor / Informative
Location	Gamster.sol#L33,37
Status	Unresolved

Description

The contract performs actions and state mutations from external methods that do not result in the emission of events. Emitting events for significant actions is important as it allows external parties, such as wallets or dApps, to track and monitor the activity on the contract. Without these events, it may be difficult for external parties to accurately determine the current state of the contract.

```
function transferOwnership(address _newOwner) public onlyOwner
{
    newOwner = _newOwner;
}
```

Recommendation

It is recommended to include events in the code that are triggered each time a significant action is taking place within the contract. These events should include relevant details such as the user's address and the nature of the action taken. By doing so, the contract will be more transparent and easily auditable by external parties. It will also help prevent potential issues or disputes that may arise in the future.

MU - Modifiers Usage

Criticality	Minor / Informative
Location	Gamster.sol#L68,83
Status	Unresolved

Description

The contract is using repetitive statements on some methods to validate some preconditions. In Solidity, the form of preconditions is usually represented by the modifiers. Modifiers allow you to define a piece of code that can be reused across multiple functions within a contract. This can be particularly useful when you have several functions that require the same checks to be performed before executing the logic within the function.

```
        require(to != address(0), "ERC20: transfer to the zero
address");
```

Recommendation

The team is advised to use modifiers since it is a useful tool for reducing code duplication and improving the readability of smart contracts. By using modifiers to perform these checks, it reduces the amount of code that is needed to write, which can make the smart contract more efficient and easier to maintain.

L04 - Conformance to Solidity Naming Conventions

Criticality	Minor / Informative
Location	Gamster.sol#L33
Status	Unresolved

Description

The Solidity style guide is a set of guidelines for writing clean and consistent Solidity code. Adhering to a style guide can help improve the readability and maintainability of the Solidity code, making it easier for others to understand and work with.

The followings are a few key points from the Solidity style guide:

1. Use camelCase for function and variable names, with the first letter in lowercase (e.g., myVariable, updateCounter).
2. Use PascalCase for contract, struct, and enum names, with the first letter in uppercase (e.g., MyContract, UserStruct, ErrorEnum).
3. Use uppercase for constant variables and enums (e.g., MAX_VALUE, ERROR_CODE).
4. Use indentation to improve readability and structure.
5. Use spaces between operators and after commas.
6. Use comments to explain the purpose and behavior of the code.
7. Keep lines short (around 120 characters) to improve readability.

```
address _newOwner
```

Recommendation

By following the Solidity naming convention guidelines, the codebase increased the readability, maintainability, and makes it easier to work with.
Find more information on the Solidity documentation
https://docs.soliditylang.org/en/stable/style-guide.html#naming-conventions.

L16 - Validate Variable Setters

Criticality	Minor / Informative
Location	Gamster.sol#L34
Status	Unresolved

Description

The contract performs operations on variables that have been configured on user-supplied input. These variables are missing of proper check for the case where a value is zero. This can lead to problems when the contract is executed, as certain actions may not be properly handled when the value is zero.

```
newOwner = _newOwner
```

Recommendation

By adding the proper check, the contract will not allow the variables to be configured with zero value. This will ensure that the contract can handle all possible input values and avoid unexpected behavior or errors. Hence, it can help to prevent the contract from being exploited or operating unexpectedly.

L19 - Stable Compiler Version

Criticality	Minor / Informative
Location	Gamster.sol#L6
Status	Unresolved

Description

The `^` symbol indicates that any version of Solidity that is compatible with the specified version (i.e., any version that is a higher minor or patch version) can be used to compile the contract. The version lock is a mechanism that allows the author to specify a minimum version of the Solidity compiler that must be used to compile the contract code. This is useful because it ensures that the contract will be compiled using a version of the compiler that is known to be compatible with the code.

```
pragma solidity ^0.8.0;
```

Recommendation

The team is advised to lock the pragma to ensure the stability of the codebase. The locked pragma version ensures that the contract will not be deployed with an unexpected version. An unexpected version may produce vulnerabilities and undiscovered bugs. The compiler should be configured to the lowest version that provides all the required functionality for the codebase. As a result, the project will be compiled in a well-tested LTS (Long Term Support) environment.

L22 - Potential Locked Ether

Criticality	Minor / Informative
Location	Gamster.sol#L97
Status	Unresolved

Description

The contract contains Ether that has been placed into a Solidity contract and is unable to be transferred. Thus, it is impossible to access the locked Ether. This may produce a financial loss for the users that have called the payable method.

```
receive() external payable {
        revert("Gamster: contract does not accept Ether");
    }
```

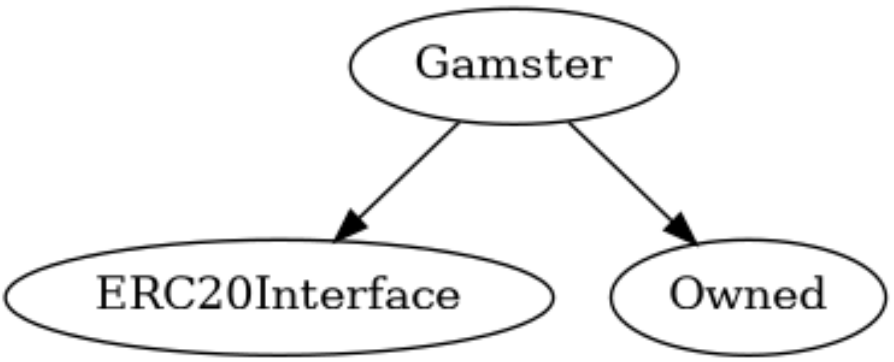
Recommendation

The team is advised to either remove the payable method or add a withdraw functionality. it is important to carefully consider the risks and potential issues associated with locked Ether.

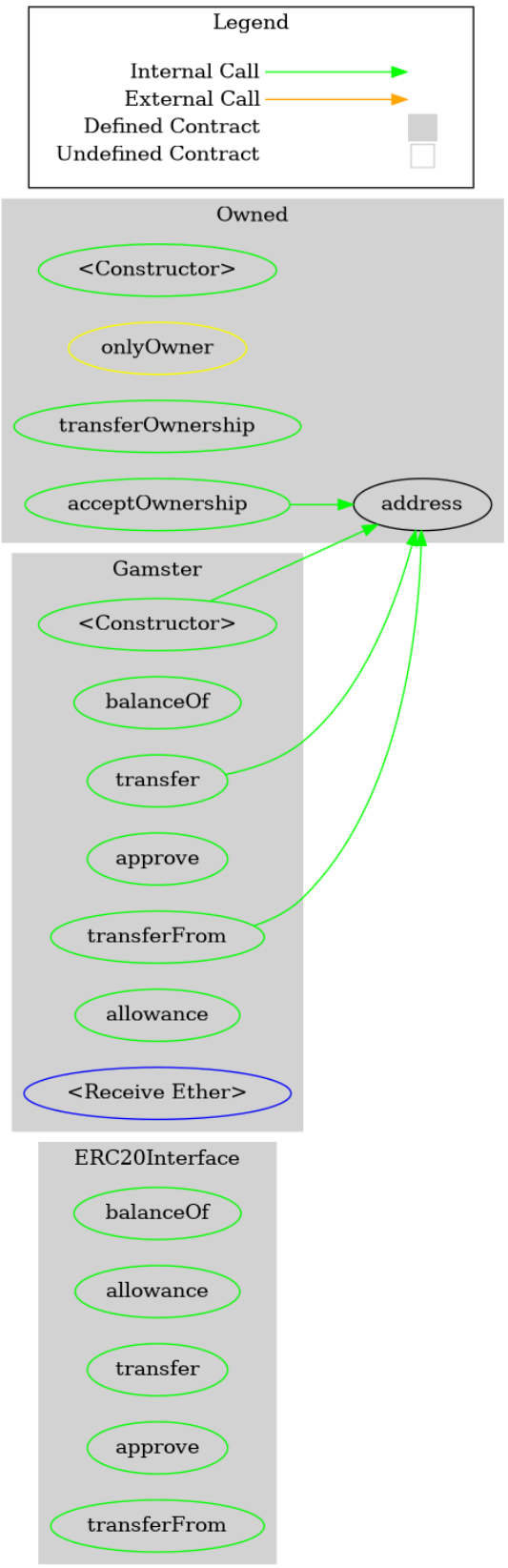
Functions Analysis

Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
ERC20Interface	Implementation			
	balanceOf	Public		-
	allowance	Public		-
	transfer	Public	✓	-
	approve	Public	✓	-
	transferFrom	Public	✓	-
Owned	Implementation			
		Public	✓	-
	transferOwnership	Public	✓	onlyOwner
	acceptOwnership	Public	✓	-
Gamster	Implementation	ERC20Interface, Owned		
		Public	✓	-
	balanceOf	Public		-
	transfer	Public	✓	-
	approve	Public	✓	-
	transferFrom	Public	✓	-
	allowance	Public		-
		External	Payable	-

Inheritance Graph



Flow Graph


Legend
Internal Call
External Call
Defined Contract
Undefined Contract
Owned
<Constructor>
onlyOwner
transferOwnership
acceptOwnership
address
Gamster
<Constructor>
balanceOf
transfer
approve
transferFrom
allowance
<Receive Ether>
ERC20Interface
balanceOf
allowance
transfer
approve
transferFrom

Summary

GOIN is an interesting project that has a friendly and growing community. This audit investigates security issues, business logic concerns and potential improvements.

The Smart Contract analysis reported no compiler error or critical issues. Only minor recommendations were identified for the optimization of the smart contract’s performance.

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Blockchain technology and cryptographic assets present a high level of ongoing risk Cyberscope's position is that each company and individual are responsible for their own due diligence and continuous security Cyberscope's goal is to help reduce the attack vectors and the high level of variance associated with utilizing new and consistently changing technologies and in no way claims any guarantee of security or functionality of the technology we agree to analyze. The assessment services provided by Cyberscope are subject to dependencies and are under continuing development. You agree that your access and/or use including but not limited to any services reports and materials will be at your sole risk on an as-is where-is and as-available basis Cryptographic tokens are emergent technologies and carry with them high levels of technical risk and uncertainty. The assessment reports could include false positives false negatives and other unpredictable results. The services may access and depend upon multiple layers of third parties.

About Cyberscope

Cyberscope is a blockchain cybersecurity company that was founded with the vision to make web3.0 a safer place for investors and developers. Since its launch, it has worked with thousands of projects and is estimated to have secured tens of millions of investors' funds.

Cyberscope is one of the leading smart contract audit firms in the crypto space and has built a high-profile network of clients and partners.

The Cyberscope team

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