Cyberscope

Audit Report

GalaxyHub AI

Sep 2024

Network	BSC
Address	0x6357A3Cc4788de00ad6e9E02EE4d11cE9d64CCc5
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	Unresolved

Diagnostics

Critical Medium Minor / Informative

Severity	Code	Description	Status
●	MTEE	Missing Transfer Event Emission	Unresolved
●	TLD	Transfer Logic Duplication	Unresolved
●	L02	State Variables could be Declared Constant	Unresolved
●	L19	Stable Compiler Version	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	SimpleGalaxyHubAI
Compiler Version	v0.8.0+commit.c7dfd78e
Optimization	200 runs
Explorer	https://bscscan.com/address/0x6357a3cc4788de00ad6e9e02ee4d11ce9d64ccc5
Address	0x6357a3cc4788de00ad6e9e02ee4d11ce9d64ccc5
Network	BSC
Symbol	GXB
Decimals	18
Total Supply	1,000,000,000
Badge Eligibility	Must Fix Criticals

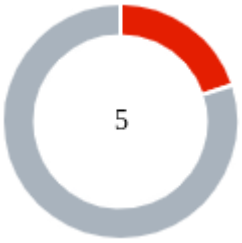
Audit Updates

Initial Audit	01 Sep 2024

Source Files

Filename	SHA256
SimpleGalaxyHubAI.sol	733831d0e28b3edae10f1e2aefdc02fa11da4270271687684c03706b759b5fa8

Findings Breakdown



Critical	1
Medium	0
Minor / Informative	4

Severity	Unresolved	Acknowledged	Resolved	Other
Critical	1	0	0	0
Medium	0	0	0	0
Minor / Informative	4	0	0	0

BC - Blacklists Addresses

Criticality	Critical
Location	SimpleGalaxyHubAI.sol#L68
Status	Unresolved

Description

The contract owner has the authority to stop addresses from transactions. The owner may take advantage of it by calling the `blacklistAddress` function.

```
function blacklistAddress(address account, bool blacklisted)
public onlyOwner {
    isBlacklisted[account] = blacklisted;
    emit Blacklisted(account, blacklisted);
}
```

Recommendation

The team should carefully manage the private keys of the owner's account. We strongly recommend a powerful security mechanism that will prevent a single user from accessing the contract admin functions.

Temporary Solutions:

These measurements do not decrease the severity of the finding

- Introduce a time-locker mechanism with a reasonable delay.
- Introduce a multi-signature wallet so that many addresses will confirm the action.
- Introduce a governance model where users will vote about the actions.

Permanent Solution:

- Renouncing the ownership, which will eliminate the threats but it is non-reversible.

MTEE - Missing Transfer Event Emission

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

Description

The contract does not emit an event when portions of the main amount are transferred during the transfer process. This lack of event emission results in decreased transparency and traceability regarding the flow of tokens, and hinders the ability of decentralized applications (dApps), such as blockchain explorers, to accurately track and analyze these transactions.

```
balanceOf[msg.sender] = totalSupply;
```

Recommendation

It is advisable to incorporate the emission of detailed event logs following each asset transfer. These logs should encapsulate key transaction details, including the identities of the sender and receiver, and the quantity of assets transferred. Implementing this practice will enhance the reliability and transparency of transaction tracking systems, ensuring accurate data availability for ecosystem participants.

TLD - Transfer Logic Duplication

Criticality	Minor / Informative
Location	SimpleGalaxyHubAI.sol#L36,55
Status	Unresolved

Description

The contract is currently designed with both the `transfer` and `transferFrom` functions containing segments that execute similar logic, such as checks for blacklisting and balance sufficiency, and adjustments of balances. This duplication leads to redundant code, which increases the risk of errors, makes the contract harder to maintain, and can complicate future updates. Any required changes to the logic, such as modifying validation rules or updating events, would necessitate alterations in multiple places, increasing the potential for inconsistencies or overlooked updates.

```
   function transfer(address to, uint256 value) public returns (bool
success) {
        require(!isBlacklisted[msg.sender], "Sender is blacklisted");
        require(!isBlacklisted[to], "Recipient is blacklisted");
        require(balanceOf[msg.sender] >= value, "Insufficient balance");

        balanceOf[msg.sender] -= value;
        balanceOf[to] += value;
        emit Transfer(msg.sender, to, value);
        return true;
    }

    function transferFrom(address from, address to, uint256 value)
public returns (bool success) {
        require(!isBlacklisted[from], "Sender is blacklisted");
        require(!isBlacklisted[to], "Recipient is blacklisted");
        require(balanceOf[from] >= value, "Insufficient balance");
        require(allowance[from][msg.sender] >= value, "Allowance
exceeded");

        balanceOf[from] -= value;
        balanceOf[to] += value;
        allowance[from][msg.sender] -= value;
        emit Transfer(from, to, value);
        return true;
    }
```

Recommendation

It is recommended to implement an internal `_transfer` function that both the `transfer` and `transferFrom` functions can utilize. This approach would centralize the shared logic, reducing code redundancy, simplifying future maintenance, and minimizing the risk of discrepancies. With a single point of modification, changes needed in the transfer logic will only need to be applied once, ensuring consistency across the contract.

L02 - State Variables could be Declared Constant

Criticality	Minor / Informative
Location	SimpleGalaxyHubAI.sol#L11,12,13
Status	Unresolved

Description

State variables can be declared as constant using the constant keyword. This means that the value of the state variable cannot be changed after it has been set. Additionally, the constant variables decrease gas consumption of the corresponding transaction.

```
string public name = "GalaxyHubAI"
string public symbol = "GXB"
uint8 public decimals = 18
```

Recommendation

Constant state variables can be useful when the contract wants to ensure that the value of a state variable cannot be changed by any function in the contract. This can be useful for storing values that are important to the contract's behavior, such as the contract's address or the maximum number of times a certain function can be called. The team is advised to add the constant keyword to state variables that never change.

L19 - Stable Compiler Version

Criticality	Minor / Informative
Location	SimpleGalaxyHubAI.sol#L2
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;
```

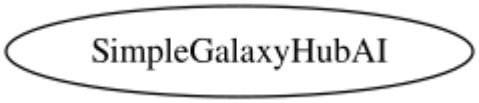
Recommendation

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.

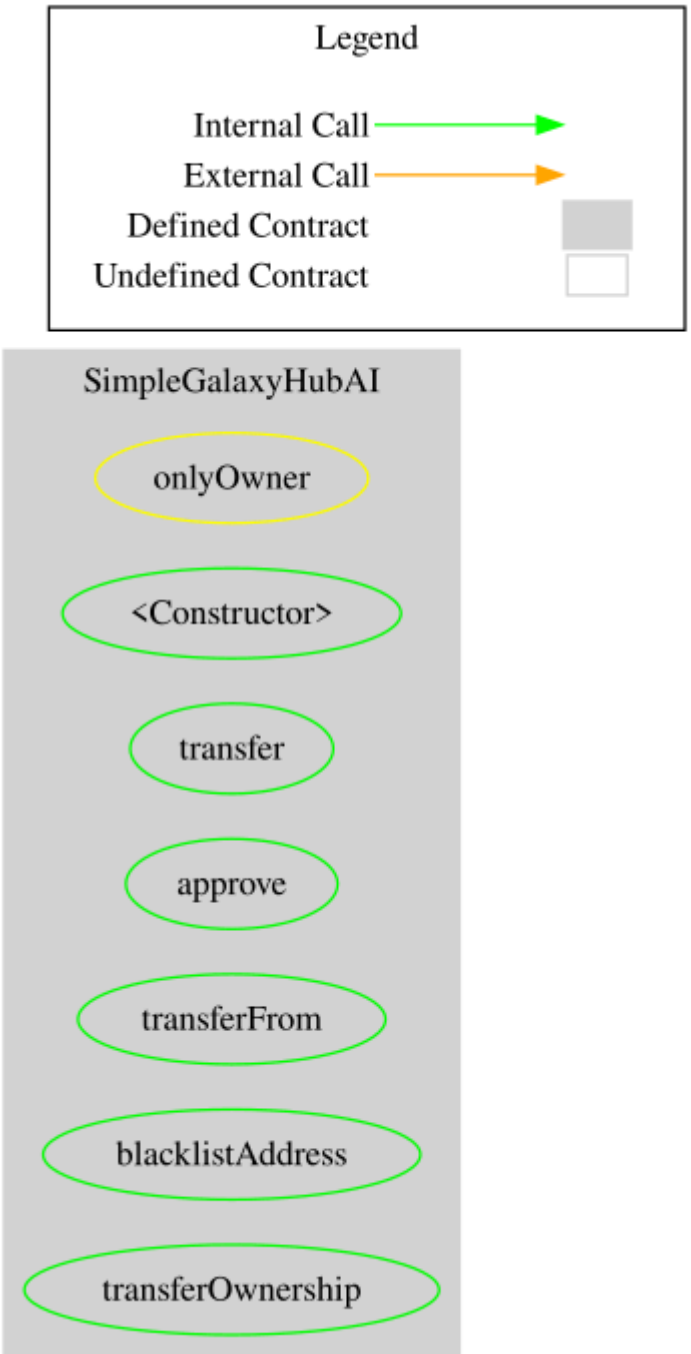
Functions Analysis

Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
SimpleGalaxyHubAI	Implementation			
		Public	✓	-
	transfer	Public	✓	-
	approve	Public	✓	-
	transferFrom	Public	✓	-
	blacklistAddress	Public	✓	onlyOwner
	transferOwnership	Public	✓	onlyOwner

Inheritance Graph



Flow Graph


Legend
Internal Call
External Call
Defined Contract
Undefined Contract
SimpleGalaxyHubAI
onlyOwner
<Constructor>
transfer
approve
transferFrom
blacklistAddress
transferOwnership

Summary

GalaxyHub AI contract implements a token mechanism. This audit investigates security issues, business logic concerns and potential improvements. There are some functions that can be abused by the owner like blacklist addresses. A multi-wallet signing pattern will provide security against potential hacks. Temporarily locking the contract or renouncing ownership will eliminate all the contract threats.

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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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