



Cyberscope

Audit Report

The Supreme Leader

July 2024

Network BASE

Address 0x928689C4023132B4ceA64F6EF6Db89Ac416f65fa

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
●	L04	Conformance to Solidity Naming Conventions	Unresolved
●	L16	Validate Variable Setters	Unresolved

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Review

Contract Name	DefiV3Token
Compiler Version	v0.8.17+commit.8df45f5f
Optimization	1337 runs
Explorer	https://basescan.org/address/0x928689c4023132b4cea64f6ef6db89ac416f65fa
Address	0x928689c4023132b4cea64f6ef6db89ac416f65fa
Network	BASE
Symbol	KIM
Decimals	18
Total Supply	33,000,000
Badge Eligibility	Yes

Audit Updates

Initial Audit	15 Jul 2024
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Source Files

Filename	SHA256
ReflectiveERC20.sol	b97fdd2e79db14d55b875e3341ab2fa1f47c197dbb81484e6400e4856a168dba
DefiV3Token.sol	f695c3728eeb3aedb6e62dc3802902c523784dab2c3987699577c94a200735d6

lib/LibCommon.sol

```
36b26da79703d916d5374759d61cd3b34897aa1f081b608bf9ce90d7fc  
43e866
```

Findings Breakdown



Critical	0
Medium	0
Minor / Informative	4

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

CR - Code Repetition

Criticality	Minor / Informative
Location	DefiV3Token.sol#L315,344
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. Specifically, the `transfer` and `transferFrom` functions share similar code segments.


```
function transfer(
    address to,
    uint256 amount
) public virtual override returns (bool) {
    uint256 taxAmount = _taxAmount(msg.sender, amount);
    uint256 deflationAmount = _deflationAmount(amount);
    uint256 amountToTransfer = amount - taxAmount -
deflationAmount;

    if (isMaxAmountOfTokensSet()) {
        if (balanceOf(to) + amountToTransfer >
maxTokenAmountPerAddress) {
            revert DestBalanceExceedsMaxAllowed(to);
        }
    }

    if (taxAmount != 0) {
        _transferNonReflectedTax(msg.sender, taxAddress,
taxAmount);
    }
    if (deflationAmount != 0) {
        _burn(msg.sender, deflationAmount);
    }
    return super.transfer(to, amountToTransfer);
}

function transferFrom(
    address from,
    address to,
    uint256 amount
) public virtual override returns (bool) {
    uint256 taxAmount = _taxAmount(from, amount);
    uint256 deflationAmount = _deflationAmount(amount);
    uint256 amountToTransfer = amount - taxAmount -
deflationAmount;

    if (isMaxAmountOfTokensSet()) {
        if (balanceOf(to) + amountToTransfer >
maxTokenAmountPerAddress) {
            revert DestBalanceExceedsMaxAllowed(to);
        }
    }

    if (taxAmount != 0) {
        _transferNonReflectedTax(from, taxAddress, taxAmount);
    }
    if (deflationAmount != 0) {
        _burn(from, deflationAmount);
    }
}
```

```
return super.transferFrom(from, to, amountToTransfer);  
}
```

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	DefiV3Token.sol#L148
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.

```
maxTotalSupply
```

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.

L04 - Conformance to Solidity Naming Conventions

Criticality	Minor / Informative
Location	DefiV3Token.sol#L158,264,278,279,298
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 _taxAddress
uint256 _feeBPS
uint256 _taxBPS
uint256 _deflationBPS
```

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/v0.8.17/style-guide.html#naming-convention>.

L16 - Validate Variable Setters

Criticality	Minor / Informative
Location	DefiV3Token.sol#L136,143,290
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.

```
taxAddress = _taxAddress  
initialTokenOwner = tokenOwner
```

Recommendation

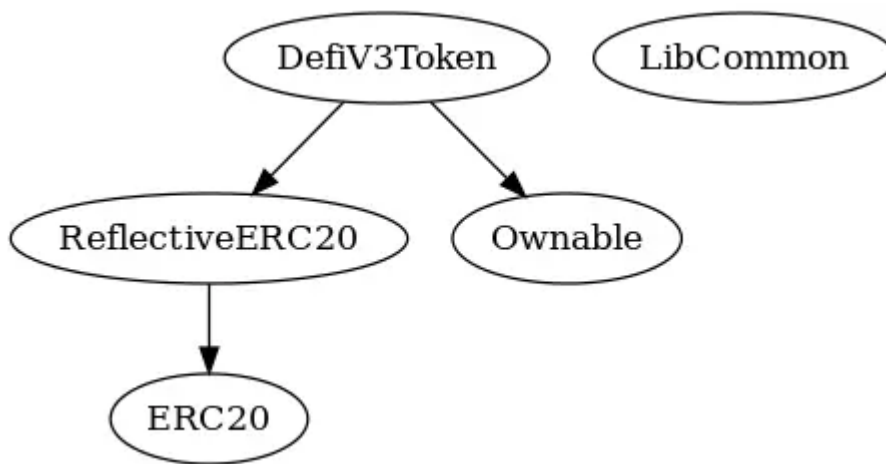
By adding the proper check, the contract will not allow the variables to be configured with zero value. This will ensure that the contract can handle all possible input values and avoid unexpected behavior or errors. Hence, it can help to prevent the contract from being exploited or operating unexpectedly.

Functions Analysis

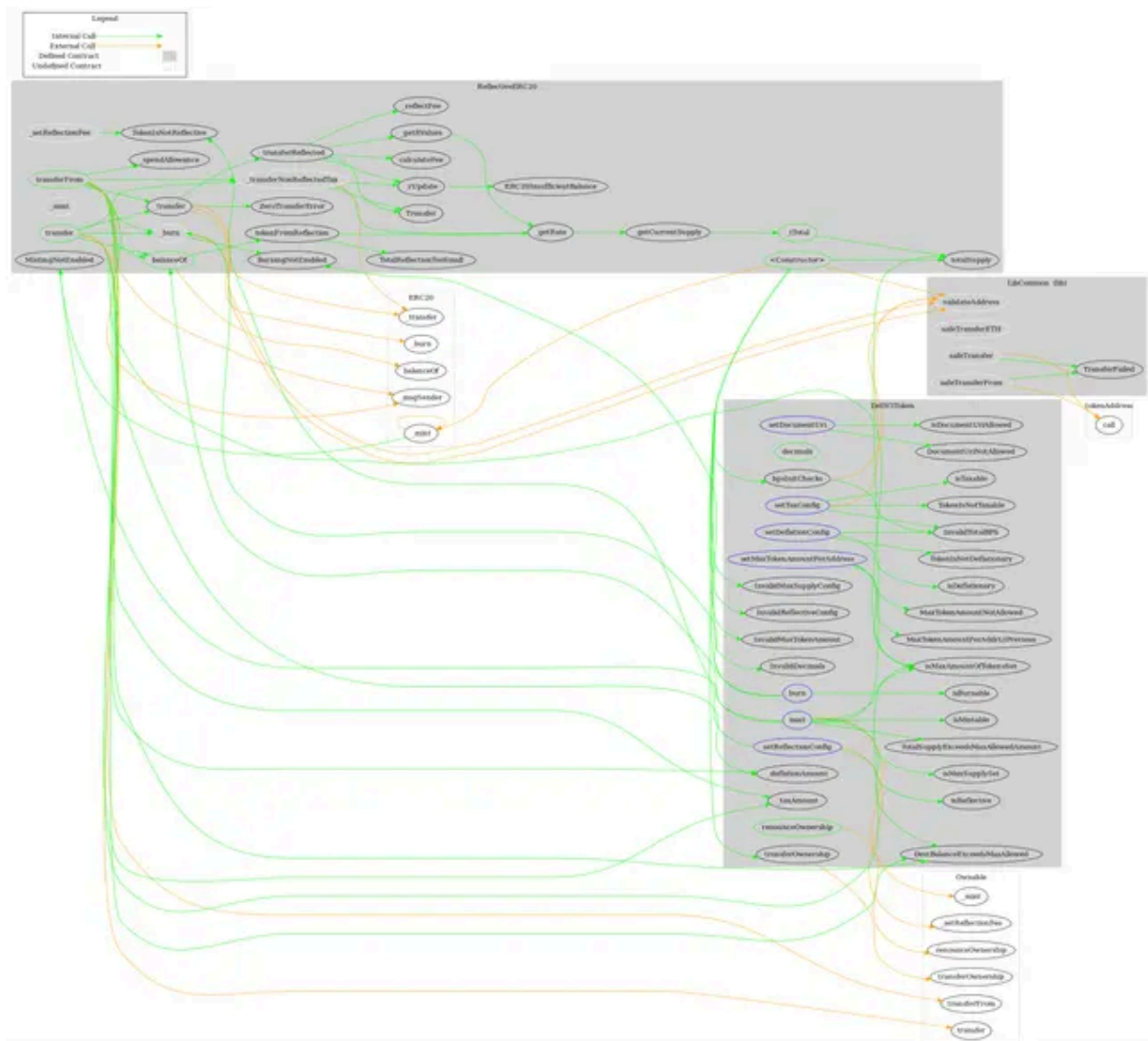
Contract	Type	Bases		
	Function Name	Visibility	Mutability	Modifiers
DefiV3Token	Implementation	ReflectiveERC20, Ownable		
		Public	✓	ReflectiveERC20
	bpsInitChecks	Private		
	isMintable	Public		-
	isBurnable	Public		-
	isMaxAmountOfTokensSet	Public		-
	isMaxSupplySet	Public		-
	isDocumentUriAllowed	Public		-
	decimals	Public		-
	isTaxable	Public		-
	isDeflationary	Public		-
	isReflective	Public		-
	setDocumentUri	External	✓	onlyOwner
	setMaxTokenAmountPerAddress	External	✓	onlyOwner
	setReflectionConfig	External	✓	onlyOwner
	setTaxConfig	External	✓	onlyOwner
	setDeflationConfig	External	✓	onlyOwner
	transfer	Public	✓	-

	transferFrom	Public	✓	-
	mint	External	✓	onlyOwner
	burn	External	✓	onlyOwner
	renounceOwnership	Public	✓	onlyOwner
	transferOwnership	Public	✓	onlyOwner
	_taxAmount	Internal		
	_deflationAmount	Internal		

Inheritance Graph



Flow Graph



Summary

The Supreme Leader contract implements a token mechanism. This audit investigates security issues, business logic concerns and potential improvements. The Supreme Leader is an interesting project that has a friendly and growing community. The Smart Contract analysis reported no compiler error or critical issues. The contract Owner can access some admin functions that can not be used in a malicious way to disturb the users' transactions.

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

Disclaimer

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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

<https://www.cyberscope.io>