Cyberscope

Audit Report
Libra

February 2023

Network   BSC
Address   0x0E6E4A1F02378dcA03BF3613D4517De387EFa576
Audited by   © cyberscope

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Review

Contract Name	Libra
Compiler Version	v0.8.17+commit.8df45f5f
Optimization	200 runs
Explorer	https://bscscan.com/address/0x0e6e4a1f02378dca03bf3613d4517de387efa576
Address	0x0e6e4a1f02378dca03bf3613d4517de387efa576
Network	BSC
Symbol	LBR
Decimals	18
Total Supply	500,000

Audit Updates

Initial Audit	22 Feb 2023
Corrected Phase 2	24 Feb 2023
Corrected Phase 3	25 Feb 2023

Source Files

Filename	SHA256
Libra.sol	a86536d57aba082f05521581e400ddd8e88d11dd20d65d5041c599d343cbd6e3

Analysis

● Critical ● Medium ● Minor / Informative ● Pass

Severity	Code	Description	Status
●	ST	Stops Transactions	Passed
●	OCTD	Transfers Contract's Tokens	Passed
●	OTUT	Transfers User's Tokens	Passed
●	ELFM	Exceeds Fees Limit	Passed
●	ULTW	Transfers Liquidity to Team Wallet	Passed
●	MT	Mints Tokens	Passed
●	BT	Burns Tokens	Passed
●	BC	Blacklists Addresses	Passed

Diagnostics

● Critical ● Medium ● Minor / Informative

Severity	Code	Description	Status
●	CO	Code Optimization	Unresolved
●	IDI	Immutable Declaration Improvement	Unresolved
●	L04	Conformance to Solidity Naming Conventions	Unresolved
●	L09	Dead Code Elimination	Unresolved
●	L18	Multiple Pragma Directives	Unresolved
●	L19	Stable Compiler Version	Unresolved

CO - Code Optimization

Criticality	Minor / Informative
Location	contracts/LibraToken.sol#L20,27
Status	Unresolved

Description

There are code segments that could be optimized. A segment may be optimized so that it becomes a smaller size, consumes less memory, executes more rapidly, or performs fewer operations.

The wallet address that receives the fees from the contract's transactions is used directly at the `_transfer()` function. One of the primary issues with using a hardcoded wallet address is that if the address changes, the contract will need to be updated and redeployed. This can be problematic in situations where the contract is already live on the blockchain, and users are interacting with it.

Additionally, using a hardcoded wallet address can make the contract more difficult to maintain and update. For example, if there are multiple instances in the code where the same address is used, updating the address in all instances can be a tedious and error-prone process.

```
_transfer(msg.sender, 0xdb2052dE1B1788f37E61340A2A2773bD4559C04d, taxAmount);
```

Recommendation

The team is advised to define variables for commonly used addresses, so they can be easily updated if needed.

IDI - Immutable Declaration Improvement

Criticality	Minor / Informative
Location	@openzeppelin/contracts/token/ERC20/ERC20.sol#L55,56
Status	Unresolved

Description

The contract is using variables that initialize them only in the constructor. The other functions are not mutating the variables. These variables are not defined as `immutable`.

```
_nam
_symbo
```

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	Libra.sol#L492,494
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.

```
uint256 private constant _taxRate = 7
uint256 private constant _totalSupply = 500000 * DECIMALS
```

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.

L09 - Dead Code Elimination

Criticality	Minor / Informative
Location	Libra.sol#L399,446
Status	Unresolved

Description

In Solidity, dead code is code that is written in the contract, but is never executed or reached during normal contract execution. Dead code can occur for a variety of reasons, such as:

- Conditional statements that are always false.
- Functions that are never called.
- Unreachable code (e.g., code that follows a return statement).

Dead code can make a contract more difficult to understand and maintain, and can also increase the size of the contract and the cost of deploying and interacting with it.

```solidity
function _burn(address account, uint256 amount) internal virtual {
        require(account != address(0), "ERC20: burn from the zero address");

        _beforeTokenTransfer(account, address(0), amount);

        uint256 accountBalance = _balances[account];
...
            _totalSupply -= amount;
        }

        emit Transfer(account, address(0), amount);

        _afterTokenTransfer(account, address(0), amount);
    }

...
```

Recommendation

To avoid creating dead code, it's important to carefully consider the logic and flow of the contract and to remove any code that is not needed or that is never executed. This can help improve the clarity and efficiency of the contract.

L18 - Multiple Pragma Directives

Criticality	Minor / Informative
Location	Libra.sol#L4,80,106,130,489
Status	Unresolved

Description

If the contract includes multiple conflicting pragma directives, it may produce unexpected errors. To avoid this, it's important to include the correct pragma directive at the top of the contract and to ensure that it is the only pragma directive included in the contract.

```solidity
pragma solidity ^0.8.0;
pragma solidity ^0.8.11;
```

Recommendation

It is important to include only one pragma directive at the top of the contract and to ensure that it accurately reflects the version of Solidity that the contract is written in.

By including all required compiler options and flags in a single pragma directive, the potential conflicts could be avoided and ensure that the contract can be compiled correctly.

L19 - Stable Compiler Version

Criticality	Minor / Informative
Location	Libra.sol#L4,80,106,130,489
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;
pragma solidity ^0.8.11;
```

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**	
IERC20	Interface				
	totalSupply	External		-	
	balanceOf	External		-	
	transfer	External	✓	-	
	allowance	External		-	
	approve	External	✓	-	
	transferFrom	External	✓	-	
IERC20Metadata	Interface	IERC20			
	name	External		-	
	symbol	External		-	
	decimals	External		-	
Context	Implementation				
	_msgSender	Internal			
	_msgData	Internal			
ERC20	Implementation	Context, IERC20, IERC20Metadata			
		Public	✓	-	
	name	Public		-	
	symbol	Public		-	
	decimals	Public		-	

	totalSupply	Public		-
	balanceOf	Public		-
	transfer	Public	✓	-
	allowance	Public		-
	approve	Public	✓	-
	transferFrom	Public	✓	-
	increaseAllowance	Public	✓	-
	decreaseAllowance	Public	✓	-
	_transfer	Internal	✓	
	_mint	Internal	✓	
	_burn	Internal	✓	
	_approve	Internal	✓	
	_spendAllowance	Internal	✓	
	_beforeTokenTransfer	Internal	✓	
	_afterTokenTransfer	Internal	✓	
Libra	Implementation	ERC20		
		Public	✓	ERC20
	transfer	Public	✓	-
	transferFrom	Public	✓	-

Inheritance Graph
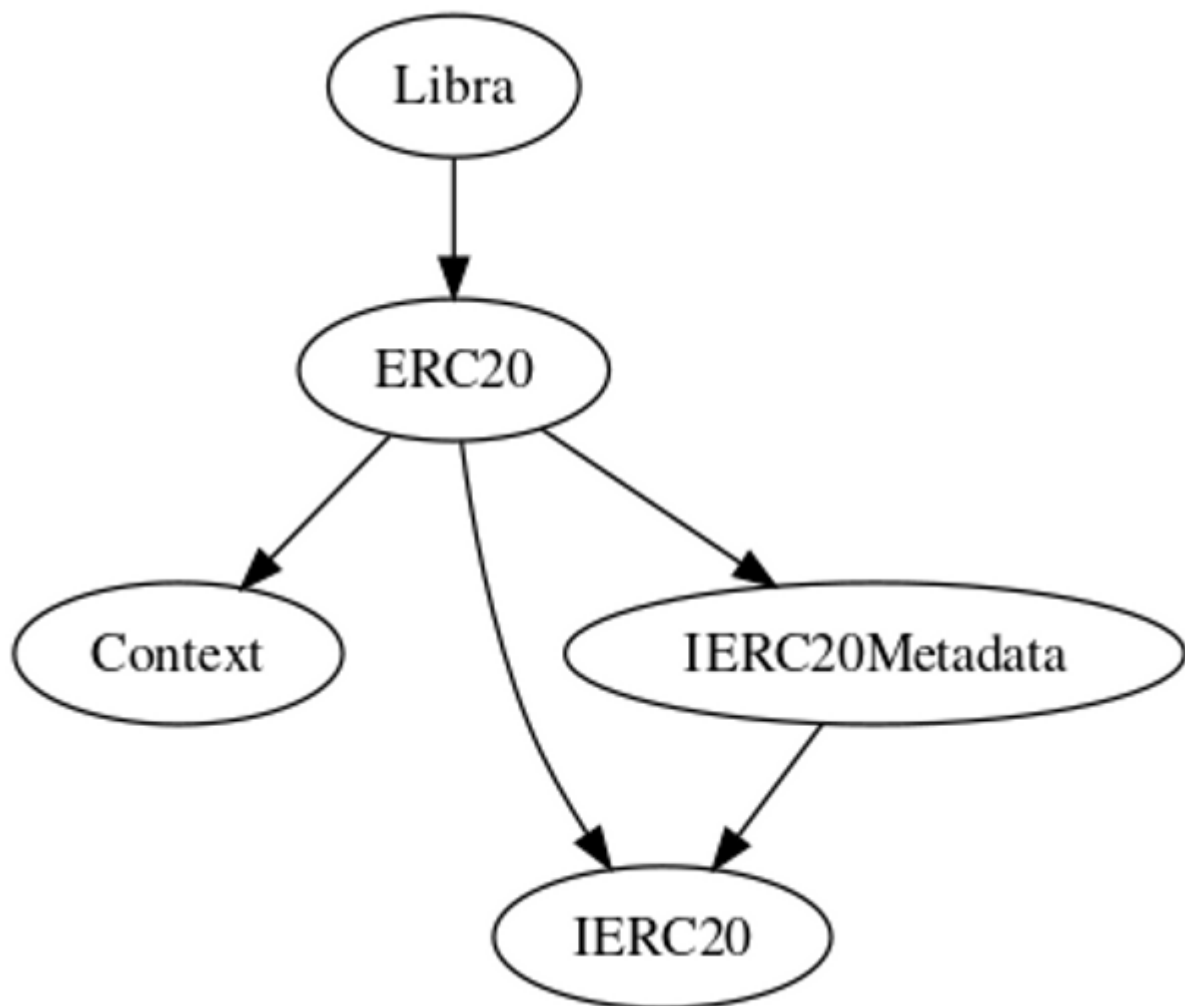
Flow Graph

Summary

Libra is an interesting project that has a friendly and growing community. The Smart Contract analysis reported no compiler errors 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. There is also a limit of max 7% fees.

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The Cyberscope team

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