Cyberscope

Audit Report

MelodyG

June 2022

Type	BEP20
Network	BSC
Address	0x40f8448966b0fe295d9dce6f88ebc51327465ffd
Audited by	© cyberscope

Table of Contents

Contract Review

Contract Name	MyToken
Compiler Version	v0.8.7+commit.e28d00a7
Optimization	200 runs
Licence	MIT
Explorer	https://bscscan.com/token/0x40f8448966b0fe295d9dce6f88ebc51327465ffd
Symbol	MDY
Decimals	18
Total Supply	1,000,000
Domain	https://www.melodyg.finance/

Source Files

Filename	**SHA256**
contract.sol	32ea1788aedeba67fe6501378e772bd34b688a98ff4cdf06fbc6e2d70ddb0c5d

Audit Updates

Initial Audit	24th June 2022
Corrected	

Contract Analysis

Critical Medium Minor Pass

Severity	Code	Description
●	ST	Contract Owner is not able to stop or pause transactions
●	OCTD	Contract Owner is not able to transfer tokens from specific address
●	OTUT	Owner Transfer User's Tokens
●	ELFM	Contract Owner is not able to increase fees more than a reasonable percent (25%)
●	ULTW	Contract Owner is not able to increase the amount of liquidity taken by dev wallet more than a reasonable percent
●	MT	Contract Owner is not able to mint new tokens
●	BT	Contract Owner is not able to burn tokens from specific wallet
●	BC	Contract Owner is not able to blacklist wallets from selling

ST - Stop Transactions

Criticality	critical
Location	contract.sol#L608

Description

The contract owner has the authority to prevent users from selling by increasing the sellTax and converting into a honeypot.

```
if(to == pair) {
        uint256  _taxable = amount * sellTax / 100;
        _balances[marketing()] += _taxable;
        _balances[to] += (amount-_taxable);
}
```

Recommendation

The contract could embody a check for not allowing setting the total less than a reasonable amount. A suggested implementation could check that the maximum amount should be more than a fixed percentage of the total supply.

ELFM - Exceed Limit Fees Manipulation

Criticality	critical
Location	contract.sol#L399

Description

The contract owner has the authority to increase over the allowed limit of 25%. The owner may take advantage of it by calling the `changeTax` function with a high percentage value.

```
function changeTax(uint256 newbuyTax,uint256 newsellTax) public onlyOwner
returns(bool){
      buyTax = newbuyTax;
      sellTax = newsellTax;
    return true;
   }
```

Recommendation

The contract could embody a check for the maximum acceptable value.

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. That risk can be prevented by temporarily locking the contract or renouncing ownership.

Contract Diagnostics

Critical Medium Minor

Severity	Code	Description
	FSA	Fixed Swap Address
	MAL	Misused Algorithmic Logic
	L01	Public Function could be Declared External
	L02	State Variables could be Declared Constant
	L04	Conformance to Solidity Naming Conventions
	L13	Divide before Multiply Operation

FSA - Fixed Swap Address

Criticality	minor
Location	contract.sol#L839

Description

The swap address is assigned once in the constructor and it can not be changed. The decentralized swaps sometimes create a new swap version or abandon the current. A contract that cannot change the swap address may not be able to catch-up the upgrade.

```
IRouter _router = IRouter(0x10ED43C718714eb63d5aA57B78B54704E256024E);
```

Recommendation

It could be better to allow the swap address mutation in case of future swap updates.

MAL - Misused Algorithmic Logic

Criticality	minor
Location	contract.sol#L363

Description

The algorithmic flow does not follow the required business logic. The function _withdrawStake creates empty spots on the data structures.
For instance,

Index 1 value a, Index 2 value b , Index 3 value c

On _withdrawStake on index 2

Index 1 value a, Index 2 value empty , Index 3 value c

```
function _withdrawStake(uint256 amount, uint256 index) internal returns(uint256){
    uint256 user_index = stakes[msg.sender];
    Stake memory current_stake = stakeholders[user_index].address_stakes[index];
```

Recommendation

The algorithm should be reshaped so it will match to the business logic.

L01 - Public Function could be Declared External

Criticality	minor
Location	contract.sol#L422,520,811,75,458,563,441,472,484,543,412,79,433,395,465,498,796,759

Description

Public functions that are never called by the contract should be declared external to save gas.

```
hasStake
burn
approve
totalSupply
changeTax
name
transferOwnership
stake
increaseAllowance
...
```

Recommendation

Use the external attribute for functions never called from the contract.

L02 - State Variables could be Declared Constant

Criticality	minor
Location	contract.sol#L257,46

Description

Constant state variables should be declared constant to save gas.

```
_marketingAddress
rewardPerMin
```

Recommendation

Add the constant attribute to state variables that never change.

L04 - Conformance to Solidity Naming Conventions

Criticality	minor
Location	contract.sol#L422,412,759,97,353

Description

Solidity defines a naming convention that should be followed. Rule exceptions:

- Allow constant variable name/symbol/decimals to be lowercase.
- Allow _ at the beginning of the mixed_case match for private variables and unused parameters.

```
_current_stake
WETH
_staker
_amount
stake_index
```

Recommendation

Follow the Solidity naming convention.
https://docs.soliditylang.org/en/v0.4.25/style-guide.html#naming-conventions.

L13 - Divide before Multiply Operation

Criticality	minor
Location	contract.sol#L353

Description

Performing divisions before multiplications may cause lose of prediction.

```
(((block.timestamp - _current_stake.since) / 60) * _current_stake.amount) * rewardPerMin / 16000000000
```

Recommendation

The multiplications should be prior to the divisions.

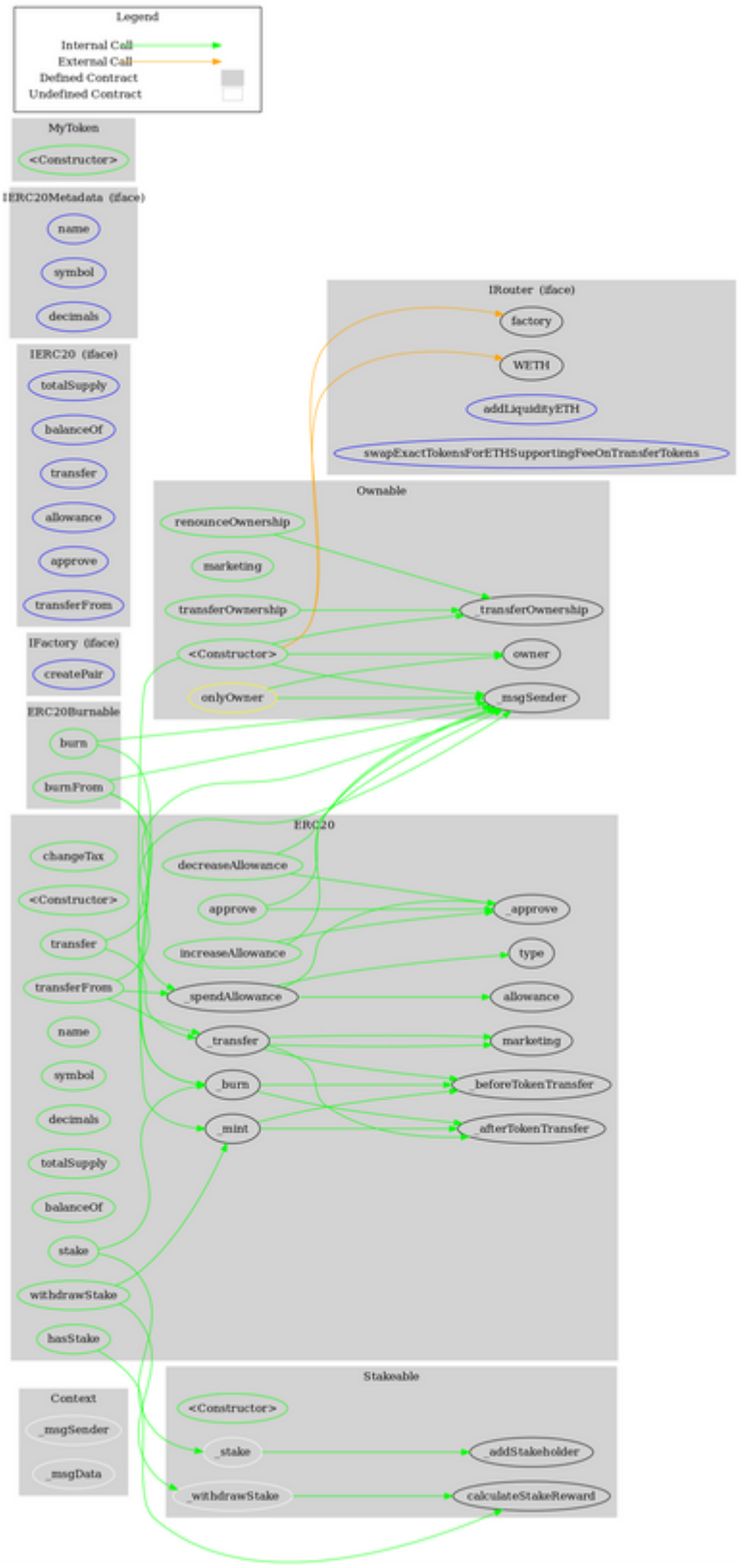
Contract Functions

Contract	Type	Bases		
	Function Name	**Visibility**	**Mutability**	**Modifiers**
Context	Implementation			
	_msgSender	Internal		
	_msgData	Internal		
Ownable	Implementation	Context		
	<Constructor>	Public	✓	-
	owner	Public		-
	marketing	Public		-
	renounceOwnership	Public	✓	onlyOwner
	transferOwnership	Public	✓	onlyOwner
	_transferOwnership	Internal	✓	
IFactory	Interface			
	createPair	External	✓	-
IRouter	Interface			
	factory	External		-
	WETH	External		-
	addLiquidityETH	External	Payable	-
	swapExactTokensForETHSupportingFeeOnTransferTokens	External	✓	-
IERC20	Interface			
	totalSupply	External		-
	balanceOf	External		-
	transfer	External	✓	-
	allowance	External		-
	approve	External	✓	-
	transferFrom	External	✓	-

IERC20Metadata	Interface	IERC20		
	name	External		-
	symbol	External		-
	decimals	External		-
Stakeable	Implementation			
	<Constructor>	Public	✓	-
	_addStakeholder	Internal	✓	
	_stake	Internal	✓	
	calculateStakeReward	Internal		
	_withdrawStake	Internal	✓	
ERC20	Implementation	Context, IERC20, IERC20Metadata, Ownable, Stakeable		
	changeTax	Public	✓	onlyOwner
	<Constructor>	Public	✓	-
	stake	Public	✓	-
	withdrawStake	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	✓	
	hasStake	Public		-
ERC20Burnable	Implementation	Context, ERC20		
	burn	Public	✓	-
	burnFrom	Public	✓	-
MyToken	Implementation	ERC20, ERC20Burnable		
	<Constructor>	Public	✓	ERC20

Contract Flow



Domain Info

Domain Name	melodyg.finance
Registry Domain ID	6bfb9f722e9543f8bfe054f364db8cd9-DONUTS
Creation Date	2022-06-19T08:48:51Z
Updated Date	2022-06-24T08:49:19Z
Registry Expiry Date	2023-06-19T08:48:51Z
Registrar WHOIS Server	whois.godaddy.com/
Registrar URL	http://www.godaddy.com/domains/search.aspx?ci=8990
Registrar	GoDaddy.com, LLC
Registrar IANA ID	146

The domain has been created in 12 months before the creation of the audit.

There is no public billing information, the creator is protected by the privacy settings.

Summary

Token is an interesting project that has a friendly and growing community. The Smart Contract analysis reported two critical severity issues. There are some functions that can be abused by the owner like stopping transactions and manipulating the fees without limit. A multi-wallet signing pattern will provide security against potential hacks. Temporarily locking the contract or renouncing ownership will eliminate all the contract threats.

The contract can be converted into a honeypot and prevent users from selling if the owner abuses the admin functions.

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About Cyberscope

Coinscope audit and K.Y.C. service has been rebranded to Cyberscope.

Coinscope is the leading early coin listing, voting and auditing authority firm. The audit process is analyzing and monitoring many aspects of the project. That way, it gives the community a good sense of security using an informative report and a generic score.

Cyberscope and Coinscope are aiming to make crypto discoverable and efficient globally. They provide all the essential tools to assist users draw their own conclusions.

The Cyberscope team

https://www.cyberscope.io