Cyberscope

# Audit Report

# Dogemoon

March 2022

| | |
|---|---|
| Type | BEP20 |
| Network | BSC |
| Address | 0x993653Ef81B783FD2b93488928Be672aff9086F2 |
| Audited by | © cyberscope |

# Table of Contents

# Contract Review

| | |
|---|---|
| **Contract Name** | DOGEMOON |
| **Compiler Version** | v0.8.12+commit.f00d7308 |
| **Optimization** | 200 runs |
| **Licence** | Unlicense |
| **Explorer** | https://bscscan.com/token/0x993653Ef81B783FD2b93488928Be672aff9086F2 |
| **Symbol** | DGM |
| **Decimals** | 4 |
| **Total Supply** | 100,000,000 |
| **Source** | contract.sol |
| **Domain** | |

# Audit Updates

| | |
|---|---|
| **Initial Audit** | 10th March 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#L474,541 |

## Description

The contract owner has the authority to stop transactions for all users excluding the owner. The owner may take advantage of it by setting the `_maxTxAmount` to zero.

```
if(!authorizations[sender] && !authorizations[recipient]){
    require(tradingOpen,"Trading not open yet");
}
```

The contract owner has the authority to stop the sales for all users excluding the owner. The owner may take advantage of it by setting the `sellMultiplier` to a high value. This will make the contract operate as a honeypot.

```
uint256 multiplier = transferMultiplier;
if(recipient == pair){
    multiplier = sellMultiplier;
} else if(sender == pair){
    multiplier = buyMultiplier;
}

uint256 feeAmount = amount.mul(totalFee).mul(multiplier).div(feeDenominator *
100);
```

## Recommendation

The contract could embody a check for not allowing setting the _maxTxAmount 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.

About the fees read the recommendation in the corresponding section.

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.

# OTUT - Owner Transfer User's Tokens

| | |
|---|---|
| **Criticality** | critical |
| **Location** | contract.sol#L732 |

## Description

The contract owner has the authority to transfer the balance of a user’s address to the other addresses. The owner may take advantage of it by calling the `multiTransfer` function.

```
function multiTransfer(address from, address[] calldata addresses, uint256[]
calldata tokens) external onlyOwner {

    require(addresses.length < 501,"GAS Error: max airdrop limit is 500
addresses");
    require(addresses.length == tokens.length,"Mismatch between Address and
token count");

    uint256 SCCC = 0;

    for(uint i=0; i < addresses.length; i++){
        SCCC = SCCC + tokens[i];
    }

    require(balanceOf(from) >= SCCC, "Not enough tokens in wallet");

    for(uint i=0; i < addresses.length; i++){
        _basicTransfer(from,addresses[i],tokens[i]);
        if(!isDividendExempt[addresses[i]]) {
            try distributor.setShare(addresses[i], _balances[addresses[i]]) {}
catch {}
        }
    }

    // Dividend tracker
    if(!isDividendExempt[from]) {
        try distributor.setShare(from, _balances[from]) {} catch {}
    }
}
```

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

# ELFM - Exceed Limit Fees Manipulation

| | |
|---|---|
| **Criticality** | critical |
| **Location** | contract.sol#L581 |

## 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 `set_multipliers` function with a high percentage value.

```
function set_multipliers(uint256 _buy, uint256 _sell, uint256 _trans) external
onlyOwner{
    sellMultiplier = _sell;
    buyMultiplier = _buy;
    transferMultiplier = _trans;
}
```

## 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.

# BC - Blacklisted Contracts

| | |
|---|---|
| **Criticality** | critical |
| **Location** | contract.sol#L663 |

## Description

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

```
function manage_blacklist(address[] calldata addresses, bool status) public
onlyOwner {
    for (uint256 i; i < addresses.length; ++i) {
        isBlacklisted[addresses[i]] = status;
    }
}
```

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

# Contract Diagnostics

● Critical ● Medium ● Minor

| Severity | Code | Description |
|---|---|---|
| ● | L01 | Public Function could be Declared External |
| ● | L02 | State Variables could be Declared Constant |
| ● | L04 | Conformance to Solidity Naming Conventions |
| ● | L07 | Missing Events Arithmetic |
| ● | L14 | Uninitialized Variables in Local Scope |
| ● | L13 | Divide before Multiply Operation |

# L01 - Public Function could be Declared External

| | |
|---|---|
| **Criticality** | minor |
| **Location** | contract.sol#L76,80,92,588,596,659,663 |

## Description

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

```
manage_blacklist
enable_blacklist
launchStatus
tradingStatus
transferOwnership
unauthorize
authorize
```

## Recommendation

Use the external attribute for functions never called from the contract

# L02 - State Variables could be Declared Constant

| | |
|---|---|
| **Criticality** | minor |
| **Location** | contract.sol#L338,339,345,185 |

## Description

Constant state variables should be declared constant to save gas.

```
dividendsPerShareAccuracyFactor
_totalSupply
ZERO
DEAD
```

## Recommendation

Add the constant attribute to state variables that never change.

# L04 - Conformance to Solidity Naming Conventions

| | |
|---|---|
| **Criticality** | minor |
| **Location** | contract.sol#L107,210,163,164,172,458,462,581,588,596 and 39 more |

## 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.

```
_allowances
_balances
_maxWalletToken
_maxTxAmount
_totalSupply
_decimals
_symbol
_name
ZERO
...
```

## Recommendation

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

# L07 - Missing Events Arithmetic

| | |
|---|---|
| **Criticality** | minor |
| **Location** | contract.sol#L210,462,466,581,588,596,682,700,705 |

## Description

Detected missing events for critical arithmetic parameters. There are functions that have no event emitted, so it is difficult to track off-chain changes.

```
targetLiquidity = _target
swapThreshold = _amount
liquidityFee = _liquidityFee
launchedAt = _launchblock
deadBlocks = _deadBlocks
sellMultiplier = _sell
_maxTxAmount = amount
_maxTxAmount = (_totalSupply * maxTXPercentage_base1000) / 1000
minPeriod = _minPeriod
```

## Recommendation

Emit an event for critical parameter changes.

# L14 - Uninitialized Variables in Local Scope

| | |
|---|---|
| **Criticality** | minor |
| **Location** | contract.sol#L664 |

## Description

The are variables that are defined in the local scope and are not initialized.

```
i
```

## Recommendation

All the local scoped variables should be initialized.

# L13 - Divide before Multiply Operation

| | |
|---|---|
| **Criticality** | minor |
| **Location** | contract.sol#L532 |

## Description

Performing divisions before multiplications may cause lose of prediction.

```
feeAmount = amount.mul(totalFee).mul(multiplier).div(feeDenominator * 100)
feeAmount = amount.div(100).mul(99)
```

## Recommendation

The multiplications should be prior to the divisions.

# Contract Functions

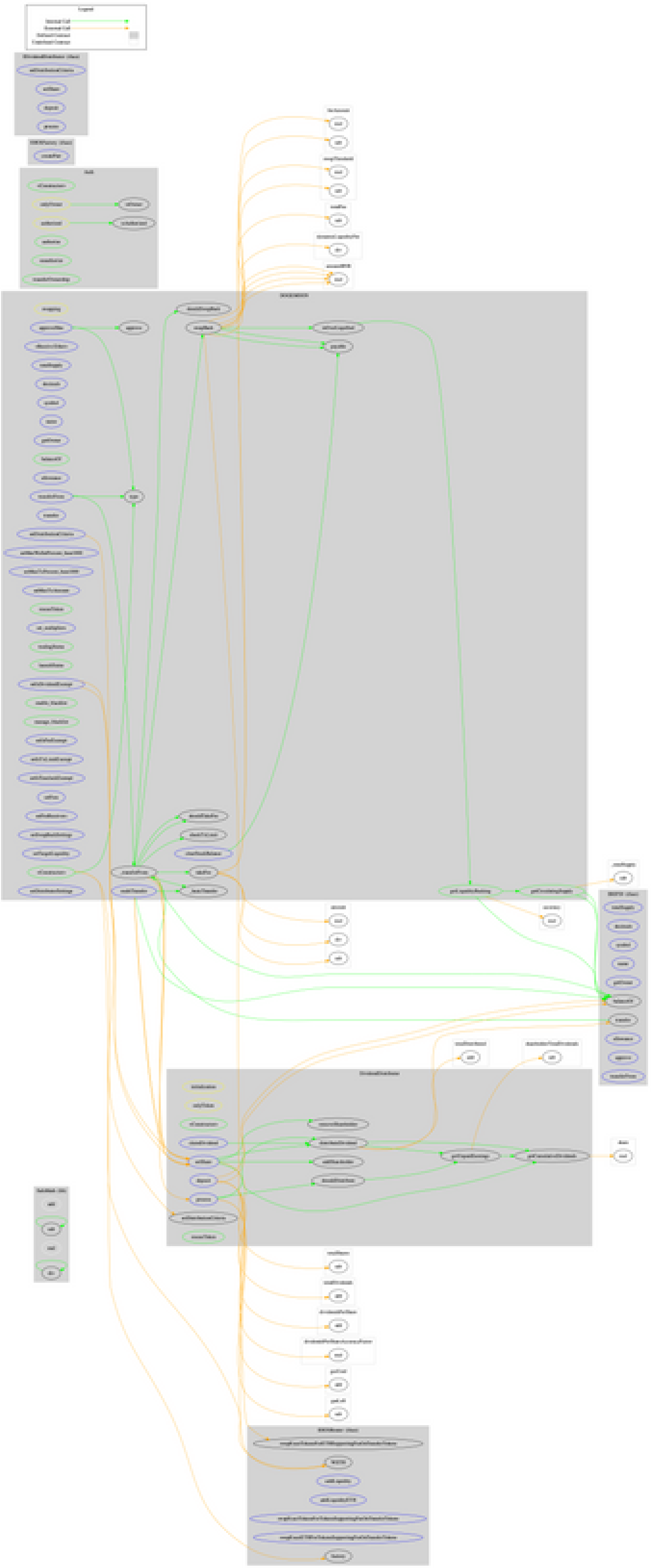
| Contract | Type | Bases | | |
|---|---|---|---|---|
| | **Function Name** | **Visibility** | **Mutability** | **Modifiers** |
| | | | | |
| **SafeMath** | Library | | | |
| | add | Internal | | |
| | sub | Internal | | |
| | sub | Internal | | |
| | mul | Internal | | |
| | div | Internal | | |
| | div | Internal | | |
| | | | | |
| **IBEP20** | Interface | | | |
| | totalSupply | External | | - |
| | decimals | External | | - |
| | symbol | External | | - |
| | name | External | | - |
| | getOwner | External | | - |
| | balanceOf | External | | - |
| | transfer | External | ✓ | - |
| | allowance | External | | - |
| | approve | External | ✓ | - |
| | transferFrom | External | ✓ | - |
| | | | | |
| **Auth** | Implementation | | | |
| | <Constructor> | Public | ✓ | - |
| | authorize | Public | ✓ | onlyOwner |
| | unauthorize | Public | ✓ | onlyOwner |
| | isOwner | Public | | - |
| | isAuthorized | Public | | - |
| | transferOwnership | Public | ✓ | onlyOwner |
| | | | | |
| **IDEXFactory** | Interface | | | |

| | | | | |
|---|---|---|---|---|
| | createPair | External | ✓ | - |
| | | | | |
| **IDEXRouter** | Interface | | | |
| | factory | External | | - |
| | WETH | External | | - |
| | addLiquidity | External | ✓ | - |
| | addLiquidityETH | External | Payable | - |
| | swapExactTokensForTokensSupportingFeeOnTransferTokens | External | ✓ | - |
| | swapExactETHForTokensSupportingFeeOnTransferTokens | External | Payable | - |
| | swapExactTokensForETHSupportingFeeOnTransferTokens | External | ✓ | - |
| | | | | |
| **IDividendDistributor** | Interface | | | |
| | setDistributionCriteria | External | ✓ | - |
| | setShare | External | ✓ | - |
| | deposit | External | Payable | - |
| | process | External | ✓ | - |
| | | | | |
| **DividendDistributor** | Implementation | IDividendDistributor | | |
| | <Constructor> | Public | ✓ | - |
| | setDistributionCriteria | External | ✓ | onlyToken |
| | setShare | External | ✓ | onlyToken |
| | deposit | External | Payable | onlyToken |
| | process | External | ✓ | onlyToken |
| | shouldDistribute | Internal | | |
| | distributeDividend | Internal | ✓ | |
| | claimDividend | External | ✓ | - |
| | rescueToken | Public | ✓ | onlyToken |
| | getUnpaidEarnings | Public | | - |
| | getCumulativeDividends | Internal | | |
| | addShareholder | Internal | ✓ | |
| | removeShareholder | Internal | ✓ | |
| | | | | |

| | | | | |
|---|---|---|---|---|
| **DOGEMOON** | Implementation | IBEP20, Auth | | |
| | <Constructor> | Public | ✓ | Auth |
| | <Receive Ether> | External | Payable | - |
| | totalSupply | External | | - |
| | decimals | External | | - |
| | symbol | External | | - |
| | name | External | | - |
| | getOwner | External | | - |
| | balanceOf | Public | | - |
| | allowance | External | | - |
| | approve | Public | ✓ | - |
| | approveMax | External | ✓ | - |
| | transfer | External | ✓ | - |
| | transferFrom | External | ✓ | - |
| | setMaxWalletPercent_base1000 | External | ✓ | onlyOwner |
| | setMaxTxPercent_base1000 | External | ✓ | onlyOwner |
| | setMaxTxAmount | External | ✓ | authorized |
| | _transferFrom | Internal | ✓ | |
| | _basicTransfer | Internal | ✓ | |
| | checkTxLimit | Internal | | |
| | shouldTakeFee | Internal | | |
| | takeFee | Internal | ✓ | |
| | shouldSwapBack | Internal | | |
| | clearStuckBalance | External | ✓ | authorized |
| | rescueToken | Public | ✓ | onlyOwner |
| | set_multipliers | External | ✓ | onlyOwner |
| | tradingStatus | Public | ✓ | onlyOwner |
| | launchStatus | Public | ✓ | onlyOwner |
| | swapBack | Internal | ✓ | swapping |
| | setIsDividendExempt | External | ✓ | authorized |
| | enable_blacklist | Public | ✓ | onlyOwner |
| | manage_blacklist | Public | ✓ | onlyOwner |
| | setIsFeeExempt | External | ✓ | authorized |
| | setIsTxLimitExempt | External | ✓ | authorized |
| | setIsTimelockExempt | External | ✓ | authorized |

| | | | | |
|---|---|---|---|---|
| | setFees | External | ✓ | authorized |
| | setFeeReceivers | External | ✓ | authorized |
| | setSwapBackSettings | External | ✓ | authorized |
| | setTargetLiquidity | External | ✓ | authorized |
| | setDistributionCriteria | External | ✓ | authorized |
| | setDistributorSettings | External | ✓ | authorized |
| | getCirculatingSupply | Public | | - |
| | getLiquidityBacking | Public | | - |
| | isOverLiquified | Public | | - |
| | multiTransfer | External | ✓ | onlyOwner |

# Contract Flow



# Domain Info

| | |
|---|---|
| **Domain Name** | |
| **Registry Domain ID** | 2679895050_DOMAIN_COM-VRSN |
| **Creation Date** | 2022-03-07T17:21:35.00Z |
| **Updated Date** | 0001-01-01T00:00:00.00Z |
| **Registry Expiry Date** | |
| **Registrar WHOIS Server** | whois.namecheap.com |
| **Registrar URL** | http://www.namecheap.com |
| **Registrar** | NAMECHEAP INC |
| **Registrar IANA ID** | 1068 |

The domain has been created 3 days before the creation of the audit.

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

# Summary

There are some functions that can be abused by the owner, like manipulating fees, transferring user's tokens to other wallets, blacklisting addresses and stopping transactions. The contract can be converted into a honeypot and prevent users from selling if the owner abuses the admin functions. 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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# 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 provides all the essential tools to assist users draw their own conclusions.

The Cyberscope team

https://www.cyberscope.io