

# Smart Contract Audit

FOR

# Milady GPT

**DATED: 12 MAY 23'** 



## **AUDIT SUMMARY**

Project name - MILADY

**Date: 12** May, 2023

**Scope of Audit-** Audit Ace was consulted to conduct the smart contract audit of the solidity source codes.

**Audit Status: Passed** 

#### **Issues Found**

Status	Critical	High	Medium	Low	Suggestion
Open	2	0	2	0	1
Acknowledged	0	0	0	0	0
Resolved	0	0	0	0	0



## **USED TOOLS**

#### Tools:

- **1.Manual Review:** The code has undergone a line-by-line review by the **Ace** team.
- 2.BSC Test Network: All tests were conducted on the BSC Test network, and each test has a corresponding transaction attached to it. These tests can be found in the "Functional Tests" section of the report.
- **3.Slither:** The code has undergone static analysis using Slither.

#### **Testnet version:**

Contract has been tested on binance smart chain testnet which can be found in below link: <a href="https://testnet.bscscan.com/address/0x2eD03d4609">https://testnet.bscscan.com/address/0x2eD03d4609</a>
<a href="fig89FE2Dfb3a7BE25615E21D80bEDF97">F9FE2Dfb3a7BE25615E21D80bEDF97</a>



## **Token Information**

Name: MiladyGPT

Symbol: MILADY

Decimals: 18

Network: Binance smart chain

Token Type: BEP20

#### **Token Address:**

0xEB90025B6f7f9260a0b32dcB9eD1A63C70eB3Fc7

#### Owner:

0x23E95c782F2a6a63A89ff9Cb15f6e3a258Ef55f2 (at time of writing the audit)

**Deployer**:0x23E95c782F2a6a63A89ff9Cb15f6e3a25 8Ef55f2



## **Token Information**

Fees:

Buy Fees: up to 25%

Sell Fees: up to 25%

Transfer Fees: up to 25%

Fees Privilige: Owner

Ownership: Owned

Minting: None

Max Tx Amount/ Max Wallet Amount: No

Blacklist: No

**Other Priviliges**: Changing swap threshold - changing fees - modifying buyback settings



## **AUDIT METHODOLOGY**

The auditing process will follow a routine as special considerations by Auditace:

- Review of the specifications, sources, and instructions provided to Auditace to make sure the contract logic meets the intentions of the client without exposing the user's funds to risk.
- Manual review of the entire codebase by our experts, which is the process of reading source code line-byline in an attempt to identify potential vulnerabilities.
- Specification comparison is the process of checking whether the code does what the specifications, sources, and instructions provided to Auditace describe.
- Test coverage analysis determines whether the test cases are covering the code and how much code isexercised when we run the test cases.
- Symbolic execution is analysing a program to determine what inputs cause each part of a program to execute.
- Reviewing the codebase to improve maintainability, security, and control based on the established industry and academic practices.



## **VULNERABILITY CHECKLIST**





## **CLASSIFICATION OF RISK**

#### Severity

- Critical
- High-Risk
- Medium-Risk
- Low-Risk
- Gas Optimization
  /Suggestion

#### **Description**

These vulnerabilities could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.

A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.

A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.

A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.

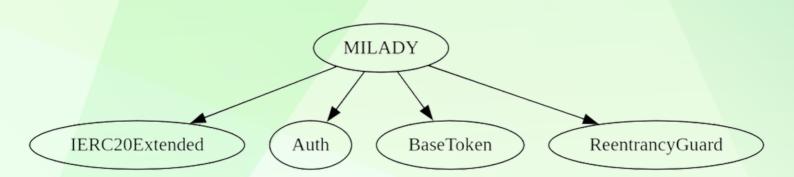
A vulnerability that has an informational character but is not affecting any of the code.

### **Findings**

Severity	Found
♦ Critical	2
♦ High-Risk	0
◆ Medium-Risk	2
♦ Low-Risk	0
<ul><li>Gas Optimization /</li><li>Suggestions</li></ul>	1



## **INHERITANCE TREE**





### **POINTS TO NOTE**

- Owner is able to set each type of tax to 25% max
- Owner is not able to set max buy/sell/transfer/hold amount
- Owner is not able to blacklist an arbitrary wallet
- Owner is not able to disable trades
- Owner is not able to mint new tokens



### **TOKENOMICS AT TIME OF AUDIT**





```
Contract |
                             Bases
    **Function Name** | **Visibility** | **Mutability** | **Modifiers** |
<mark>| **SafeMath** | Lib</mark>rary | |||
<mark>| <sup>L</sup> | tryAdd | Int</mark>ernal 🛅 | ||
<mark>| └ | tr</mark>yDiv | Internal 🖰 | | |
📙 | tryMod | Internal 🛅 | ||
| L | add | Internal 🚹 | | |
| L | sub | Internal 🗗 | | |
| └ | mul | Internal 🔓 | | |
| L | div | Internal 🗗 | | |
| └ | mod | Internal 🔂 | | |
| └ | div | Internal 🛅 | | |
| L | mod | Internal 🕤 | | |
\Pi\Pi\Pi\Pi
| **Clones** | Library | | | |
| L | clone | Internal 🛈 | 🔘 | |
| L | cloneDeterministic | Internal 🙃 | 🔘 | |
| L | predictDeterministicAddress | Internal 🛅 | | |
| L | predictDeterministicAddress | Internal 🛅 | | |
\Pi\Pi\Pi\Pi
| **IUniswapV2Factory** | Interface | ||| |
| L | feeTo | External | | NO | |
| L | feeToSetter | External | | NO | |
| L | getPair | External | | NO | |
```



```
| L | allPairsLength | External | | NO | | |
| L | createPair | External | | | NO | |
| L | setFeeTo | External | | | NO | |
| L | setFeeToSetter | External | | | NO | |
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**IUniswapV2Router01** | Interface | |||
| L | factory | External | | NO | | |
| L | WETH | External | | NO | |
| L | addLiquidity | External | | | NO | |
| L | addLiquidityETH | External | | I I NO | |
| L | removeLiquidity | External | | | NO | |
| L | removeLiquidityETH | External | | | NO | |
| L | removeLiquidityWithPermit | External | | | NO | |
| L | removeLiquidityETHWithPermit | External | | | NO | |
| L | swapExactTokensForTokens | External | | | NO | |
| L | swapTokensForExactTokens | External | | | NO | |
| L | swapExactETHForTokens | External | | I NO ! |
| L | swapTokensForExactETH | External | | | NO | |
| L | swapExactTokensForETH | External | | | NO | |
| L | swapETHForExactTokens | External | | I NO | |
| L | quote | External | | | NO | |
| L | getAmountOut | External | | NO | |
| L | getAmountIn | External | | NO | |
| L | getAmountsOut | External | | NO | |
```



```
| L | getAmountsIn | External | | NO | |
**IUniswapV2Router02** | Interface | IUniswapV2Router01 | | |
| | removeLiquidityETHSupportingFeeOnTransferTokens | External | | | | NO | | |
| | swapExactTokensForTokensSupportingFeeOnTransferTokens | External | | | | NO | |
| | swapExactETHForTokensSupportingFeeOnTransferTokens | External | | | | | NO | |
L | swapExactTokensForETHSupportingFeeOnTransferTokens | External | | 🔘 | NO 📗 |
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| **IERC20Extended** | Interface | ||| | |
| L | totalSupply | External | | NO | |
| L | decimals | External | | NO | |
| L | symbol | External | | NO | |
| L | name | External | | NO | |
| L | balanceOf | External | | NO | |
| L | transfer | External | | NO | |
| L | allowance | External | | NO | |
| L | approve | External | | | NO | |
| L | transferFrom | External | | | NO | |
\parallel \parallel \parallel \parallel \parallel \parallel \parallel
| **Auth** | Implementation | | | | |
| L | authorize | Public | | 🔘 | onlyOwner |
| L | isOwner | Public | | NO | |
| L | isAuthorized | Public | | NO | |
```



```
| L | transferOwnership | Public | | | | onlyOwner |
**IDividendDistributor** | Interface | |||
| | setDistributionCriteria | External | | | NO | | |
| L | setShare | External | | | | NO | |
| L | deposit | External | | ID | NO | |
| L | process | External | | | NO | |
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| **DividendDistributor** | Implementation | IDividendDistributor | | | | | |
| L | <Constructor> | Public | | | NO | |
| L | setDistributionCriteria | External | | | | | onlyToken |
| L | setShare | External | | | OnlyToken |
| L | deposit | External | | 📭 | onlyToken |
| L | shouldDistribute | Internal 🚹 | | |
| L | distributeDividend | Internal 🙃 | 🔘 | |
| L | claimDividend | External | | | NO | |
| L | getUnpaidEarnings | Public ! | NO! |
| L | getCumulativeDividends | Internal 🛅 | | |
| L | addShareholder | Internal 🚹 | 🌑 | |
| L | removeShareholder | Internal 🙃 | 🌑 | |
| **BaseToken** | Implementation | | | |
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| **ReentrancyGuard** | Implementation | |||
| L | <Constructor> | Public | | ( NO ! |
```



```
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**MILADY** | Implementation | IERC20Extended, Auth, BaseToken, ReentrancyGuard | | |
| L | <Constructor > | Public | | ( ) | Auth |
| L | initializeFees | Internal 🕤 | 🔘 | |
| L | initializeLiquidityBuyBack | Internal 🔒 | 🔘 | |
L | <Receive Ether> | External | | I NO | |
| L | totalSupply | External | | NO | | | |
| L | decimals | External | | NO | |
| L | symbol | External | | NO | |
| L | name | External | | NO | |
| L | balanceOf | Public | | NO | |
| L | allowance | External | | NO | |
| L | approve | Public | | | NO | |
| L | approveMax | External | | | | NO | |
| L | transfer | External | | | NO | |
| L | transferFrom | External | | | NO | |
| L | _transferFrom | Internal 🛅 | 🔘 | |
| L | _basicTransfer | Internal 🛅 | 🔘 | |
| L | shouldTakeFee | Internal 📅 | | |
| L | getTotalFee | Public | | NO | |
| L | getMultipliedFee | Public ! | NO! |
| L | takeFee | Internal 🙃 | 🔘 | |
| L | shouldSwapBack | Internal 🔓 | | |
| L | swapBack | Internal 🔒 | 🔘 | swapping |
| L | shouldAutoBuyback | Internal 🖰 | | |
```



```
| L | claimStuckTokens | External | | | | nonReentrant |
| | clearBuybackMultiplier | External | | | | authorized |
| L | triggerAutoBuyback | Internal 币 | 🔘 | |
| L | buyTokens | Internal 🚹 | 🔘 | swapping |
L setAutoBuybackSettings | External | |  authorized |
setBuybackMultiplierSettings | External | | (1) | authorized |
| L | setIsDividendExempt | External | | ( ) | authorized | |
| L | setIsFeeExempt | External | | | | authorized |
| L | setBuyBacker | External | | ( ) | authorized |
| L | setFees | Public | | ( authorized |
| L | setFees | Internal 🗗 | 🔘 | |
| L | setFeeReceivers | External | | | | authorized |
| L | setSwapBackSettings | External | | ( ) | authorized |
| L | setDistributionCriteria | External | | | | authorized |
| L | setDistributorSettings | External | | ( ) | authorized |
| L | getCirculatingSupply | Public ! | NO! |
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| **DividendDistributor** | Implementation | IDividendDistributor | | | | | |
| L | setDistributionCriteria | External | | | | | onlyToken |
| L | setShare | External | | | OnlyToken |
```



```
| L | deposit | External | | III | onlyToken | |
| L | process | External | | | | onlyToken |
| | distributeDividend | Internal 📅 | 🌑 | |
| L | claimDividend | External | L | OnlyToken |
| L | getUnpaidEarnings | Public | | NO | |
| | getCumulativeDividends | Internal 🛅 | | |
| L | addShareholder | Internal 🚹 | 🌑 | |
| L | removeShareholder | Internal 🔓 | 🔘 | |
| L | setDividendTokenAddress | External | | ( ) | onlyToken |
| **FARMPEPE** | Implementation | IBEP20, Auth | | |
| L | <Constructor> | Public | | | | Auth |
| L | <Receive Ether> | External | | I NO | |
| L | totalSupply | External | | NO | |
| L | decimals | External | | NO | |
| L | symbol | External | | NO | |
| L | name | External | | NO | |
| L | getOwner | External | | NO | |
| L | balanceOf | Public | | NO | |
| L | allowance | External ! | NO! |
| L | approve | Public | | | NO | |
| L | approveMax | External | | | NO | |
| L | savetokens | External | | | | devwall |
| L | burning | External | | | NO | |
```



```
| L | transfer | External | | | NO | |
| L | transferFrom | External | | | NO | |
<mark>| └ | transferFro</mark>m | Internal 🖰 | 🔘 | |
| L | basicTransfer | Internal 🖰 | 🔘 | | | | |
| | getTotalFee | Public | | NO | |
| L | takeFee | Internal 🙃 | 🔘 | |
| L | shouldSwapBack | Internal 🛱 | | |
| L | swapBack | Internal 🛅 | 🔘 | swapping |
| L | buyTokens | Internal 🗗 | 🔘 | swapping |
| L | launched | Internal 🛱 | | |
| L | setFeeReceivers | External | | | | devwall |
| L | setSwapBackSettings | External | | | | devwall |
| L | setTargetLiquidity | External | | | | onlyOwner |
| L | manualSend | External | | | NO | |
| L | setDistributionCriteria | External | | | | | onlyOwner |
| L | claimDividend | External | | | NO | |
| L | setDistributorSettings | External | | | | onlyOwner |
| L | getLiquidityBacking | Public | | NO | |
```



```
**Auth** | Implementation | |||
| L | <Constructor> | Public | | | | NO | |
| L | isOwner | Public | | NO | |
L transferOwnership | Public | | OnlyOwner |
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| **IERC165** | Interface | |||
| L | supportsInterface | External | | NO | |
\Pi\Pi\Pi\Pi
| **IBEP20** | Interface | | | | | |
| L | totalSupply | External | | NO | |
| L | decimals | External | | NO | |
| L | symbol | External ! | NO! |
| L | name | External | | NO | |
| L | getOwner | External | | NO | |
| L | balanceOf | External | | NO | |
| L | transfer | External | | | NO | |
| L | burning | External | | | NO | |
| L | allowance | External ! | NO! |
| L | approve | External | | | NO | |
| L | transferFrom | External | | | NO | |
111111
| **IDEXFactory** | Interface | |||
| L | createPair | External | | | NO | |
```



**IDEXRouter**   Interface
L   factory   External !   NO!
L   WETH   External !     NO !
L   addLiquidity   External !
L   addLiquidityETH   External !   IP   NO!
L   swapExactTokensForTokensSupportingFeeOnTransferTokens   External !
L   swapExactETHForTokensSupportingFeeOnTransferTokens   External .     NO
L   swapExactTokensForETHSupportingFeeOnTransferTokens   External       NO
**SafeMath**   Library
L   tryAdd   Internal 🚹
L   trySub   Internal 🗗
L   tryMul   Internal 🕂
L   tryDiv   Internal 🛅
└   tryMod   Internal 🗈
L   add   Internal 🛅
L   sub   Internal 🛅
└   mul   Internal 🕂
L   div   Internal 🕂
L   mod   Internal 🙃
L   sub   Internal 🛅
L   div   Internal 🕂
L   mod   Internal 🙃





### STATIC ANALYSIS

### **Static Analysis**

an static analysis of the code were performed using slither. No issues were found



#### 1- Adding liquidity (passed):

https://testnet.bscscan.com/tx/0xca32ba0387f67d9593fe834627 39f4c03a8adeee1be451a7059da0d67274993d

2- Buying when excluded from fees (0% tax) (passed):

https://testnet.bscscan.com/tx/0x4ea4d1715fd38dc9e1db7f0f0d7fa73b94d760f3b237ff26aceebb270986bacc

3- Selling when excluded from fees (0% tax) (passed):

https://testnet.bscscan.com/tx/0xaa1b997b3a50d9a8a18af69e3dd2e6b2b6c935270da116c5fd88f1fd66c348c3

4- Transferring when excluded from fees (0% tax) (passed):

https://testnet.bscscan.com/tx/0x5481865f7701295acf9b94ee56a 11f0a2e004ab124d259062683fc707343a0ca

- 5- Buying when not excluded from fees (up to 25% tax) (passed): https://testnet.bscscan.com/tx/0xe072297a293644457422da975fc051c2fbcb9284835200e43a69452e210c68e6
- 6- Selling when not excluded from fees (up to 25% tax) (passed): https://testnet.bscscan.com/tx/0x6a17b33ff1db8f96c39a33d0eda8bd500a2e9be6d205e9ef63aa6e6ef20b894c
- 7- Transferring when not excluded from fees (up to 25% tax) (passed):

https://testnet.bscscan.com/tx/0x127230cd675cdc11ebe35bed691 b2f22d00dd0048ae38642c272715a84916474



7- Rewards, Auto liquidity, Auto Burn, Marketing fee (passed): https://testnet.bscscan.com/tx/0x0deea27059d91ac6381abc40efe 1c49bbd59efc497e6e7450232f085284ce9a2



#### Logical – 0 swap threshold can disable trades

Severity: Critical

function: setSwapBackSettings

Status: Not Resolved

Overview:

if swapThreshold is set to 0, internal swap would be failed due to a division by zero error. (at swapBack function)

```
function setSwapBackSettings(
  bool enabled,
  uint256 _amount
) external authorized {
  swapEnabled = _enabled;
  swapThreshold = amount;
}
```

#### Suggestion

To mitigate this Logical issue, make sure that swapTokensAtAmount is always greater than 0

```
function setSwapBackSettings(
  bool _enabled,
  uint256 _amount
) external authorized {
  swapEnabled = _enabled;
  swapThreshold = _amount;
  require(swapThreshold > totalSupply / 1000000);
}
```



#### Logical – Overflow at buyback settings

Severity: Critical

function: getMultipliedFee & shouldAutoBuyback

Status: Not Resolved

#### Overview:

setBuybackMultiplierSettings and setAutoBuybackSettings functions can be used to set buybackMultiplierLength or autoBuybackBlockperiod to max uint256 which when added to buybackMultiplierTriggeredAt or autoBuybackBlockLast (if is more than 0) leads to an overflow error resulting in disabled sells for regular wallets. Additionally setting buybackMultiplerLength 0 can cause a division by zero error at getMultipliedFee function.

```
function getMultipliedFee() public view returns (uint256) {
   if (
      buybackMultiplierTriggeredAt.add(buybackMultiplierLength) >
      block.timestamp
  ) {
   function setBuybackMultiplierSettings(
      uint256 numerator,
      uint256 denominator,
      uint256 length
  ) external authorized {
    require(numerator / denominator <= 2 && numerator > denominator);
    buybackMultiplierNumerator = numerator;
    buybackMultiplierDenominator = denominator;
    buybackMultiplierLength = length;
}
```

#### Suggestion

To mitigate this Logical issue, make sure that **buybackMultiplierLength** or **autoBuybackBlockPeriod** is whithin a reasonable rang (for example 30 minute to 7 weeks)

```
function setBuybackMultiplierSettings(
    uint256 numerator,
    uint256 denominator,
    uint256 length
) external authorized {
    require(numerator / denominator <= 2 && numerator > denominator);
    buybackMultiplierNumerator = numerator;
    buybackMultiplierDenominator = denominator;
    buybackMultiplierLength = length;
    requrie(buubackMultiplierLength <= weeks);
    requrie(buubackMultiplierLength >= 30 minutes);
}
```



#### Centralization – LP tokens going to an EOA

Severity: Medium

function: swapBack Status: Not Resolved

Overview:

LP tokens generated from auto-liqudity are sent to an EOA account, this accumulated tokens may be used by a malicious owner to remove a portion of tokens from the pool

```
if (amountToLiquify > 0) {
   router.addLiquidityETH{value: amountBNBLiquidity}(
        address(this),
        amountToLiquify,
        0,
        0,
        autoLiquidityReceiver,
        block.timestamp
   );
   emit AutoLiquify(amountBNBLiquidity, amountToLiquify);
}
```

#### Suggestion

To mitigate this Centralization issue:

- Burn the new LP tokens

or

- Lock the new LP tokens



#### Centralization – Excessive fees

Severity: Medium Status: not resolved

Overview:

Fees can be up to 25 % for each type of tax (buy/sell/transfer). This is 25% more than what is declared in pinksale safu criteria.(50% in total buy+sell)

```
function _setFees(
  uint256 liquidityFee,
  uint256 _buybackFee,
  uint256 _reflectionFee,
  uint256 _marketingFee,
  uint256 feeDenominator
) internal {
  liquidityFee = _liquidityFee;
  buybackFee = _buybackFee;
  reflectionFee = reflectionFee;
  marketingFee = _marketingFee;
  totalFee = _liquidityFee.add(_buybackFee).add(_reflectionFee).add(
    _marketingFee
  feeDenominator = _feeDenominator;
  require(
    totalFee < feeDenominator / 4,
    "Total fee should not be greater than 1/4 of fee denominator"
  );
```

#### Recommendation:

Ensure that sum of total buy and total sell fees is less than 25%



#### Informational - Use of external token

Status: Not Resolved

Overview:

Contract is using 0xbA2aE424d960c26247Dd6c32edC70B295c744C43 (Dogecoin) as the reward token. This contract is beyond scope of this auidt and we assume that this token has enough liquidity and doesn't have major issues that could disable the trades and affect reward system of MILADY token.



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