MsgSender

# Smart Contract Audit Report

SYSFIXED

08 Mar 2022

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# AUDITED DETAILS

## Audited Project

| Project name | Token ticker | Blockchain |
|---|---|---|
| MsgSender | MSG | Binance Smart Chain |

## Addresses

| | |
|---|---|
| **Contract address** | 0x43f10fb99dbb8a80d1394cf452f255d4814e6495 |
| **Contract deployer address** | 0x26486B8472b0eB2C045bE732e5877adce7Ca26aA |

## Project Website

**https://msgsender.io/hold/on/bady/!**

## Codebase

**https://bscscan.com/address/0x43f10fb99dbb8a80d1394cf452f255d4814e6495#code**

# SUMMARY

MsgSender is a mobile product that gives users a new way to interact with existing decentralized exchanges (DEXs), we don't create DEX, we only build a bridge to DEX. MSG is a native token in the MsgSender ecosystem, which has been listed on Pancake, Binance Smart Chain.

## Contract Summary

**Documentation Quality**

MsgSender provides a very good documentation with standard of solidity base code.

- The technical description is provided clearly and structured and also dont have any high risk issue.

**Code Quality**

The Overall quality of the basecode is standard.

- Standard solidity basecode and rules are already followed by MsgSender with the discovery of several low issues.

**Test Coverage**

Test coverage of the project is 100% ( Through Codebase )

## Audit Findings Summary

- SWC-100 SWC-108 | Explicitly define visibility for all state variables on lines 241, 242, 243 and 244.
- SWC-115 | tx.origin should not be used for authorization, use msg.sender instead on lines 262 and 84.

# CONCLUSION

We have audited the MsgSender project released on March 2022 to discover issues and identify potential security vulnerabilities in MsgSender Project. This process is used to find technical issues and security loopholes which might be found in the smart contract.

The security audit report provides satisfactory results with low-risk issues.

The issues in the MsgSender smart contract code do not pose a considerable risk. The writing of the contract is close to the standard of writing contracts in general. The low-risk issues found are some state variable visibility is not set and the use of tx.origin as a part of authorization control.

# AUDIT RESULT

| Article | Category | Description | Result |
|---|---|---|---|
| Default Visibility | SWC-100<br>SWC-108 | Functions and state variables visibility should be set explicitly. Visibility levels should be specified consciously. | ISSUE FOUND |
| Integer Overflow and Underflow | SWC-101 | If unchecked math is used, all math operations should be safe from overflows and underflows. | PASS |
| Outdated Compiler Version | SWC-102 | It is recommended to use a recent version of the Solidity compiler. | PASS |
| Floating Pragma | SWC-103 | Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly. | PASS |
| Unchecked Call Return Value | SWC-104 | The return value of a message call should be checked. | PASS |
| Unprotected Ether Withdrawal | SWC-105 | Due to missing or insufficient access controls, malicious parties can withdraw from the contract. | PASS |
| SELFDESTRUCT Instruction | SWC-106 | The contract should not be self-destructible while it has funds belonging to users. | PASS |
| Reentrancy | SWC-107 | Check effect interaction pattern should be followed if the code performs recursive call. | PASS |
| Uninitialized Storage Pointer | SWC-109 | Uninitialized local storage variables can point to unexpected storage locations in the contract. | PASS |
| Assert Violation | SWC-110<br>SWC-123 | Properly functioning code should never reach a failing assert statement. | PASS |
| Deprecated Solidity Functions | SWC-111 | Deprecated built-in functions should never be used. | PASS |
| Delegate call to Untrusted Callee | SWC-112 | Delegatecalls should only be allowed to trusted addresses. | PASS |

| | | | |
|---|---|---|---|
| DoS (Denial of Service) | SWC-113<br>SWC-128 | Execution of the code should never be blocked by a specific contract state unless required. | PASS |
| Race Conditions | SWC-114 | Race Conditions and Transactions Order Dependency should not be possible. | PASS |
| Authorization through tx.origin | SWC-115 | tx.origin should not be used for authorization. | ISSUE FOUND |
| Block values as a proxy for time | SWC-116 | Block numbers should not be used for time calculations. | PASS |
| Signature Unique ID | SWC-117<br>SWC-121<br>SWC-122 | Signed messages should always have a unique id. A transaction hash should not be used as a unique id. | PASS |
| Incorrect Constructor Name | SWC-118 | Constructors are special functions that are called only once during the contract creation. | PASS |
| Shadowing State Variable | SWC-119 | State variables should not be shadowed. | PASS |
| Weak Sources of Randomness | SWC-120 | Random values should never be generated from Chain Attributes or be predictable. | PASS |
| Write to Arbitrary Storage Location | SWC-124 | The contract is responsible for ensuring that only authorized user or contract accounts may write to sensitive storage locations. | PASS |
| Incorrect Inheritance Order | SWC-125 | When inheriting multiple contracts, especially if they have identical functions, a developer should carefully specify inheritance in the correct order. The rule of thumb is to inherit contracts from more /general/ to more /specific/. | PASS |
| Insufficient Gas Griefing | SWC-126 | Insufficient gas griefing attacks can be performed on contracts which accept data and use it in a sub-call on another contract. | PASS |
| Arbitrary Jump Function | SWC-127 | As Solidity doesnt support pointer arithmetics, it is impossible to change such variable to an arbitrary value. | PASS |

| | | | |
|---|---|---|---|
| Typographical Error | SWC-129 | A typographical error can occur for example when the intent of a defined operation is to sum a number to a variable. | PASS |
| Override control character | SWC-130 | Malicious actors can use the Right-To-Left-Override unicode character to force RTL text rendering and confuse users as to the real intent of a contract. | PASS |
| Unused variables | SWC-131 SWC-135 | Unused variables are allowed in Solidity and they do not pose a direct security issue. | PASS |
| Unexpected Ether balance | SWC-132 | Contracts can behave erroneously when they strictly assume a specific Ether balance. | PASS |
| Hash Collisions Variable | SWC-133 | Using abi.encodePacked() with multiple variable length arguments can, in certain situations, lead to a hash collision. | PASS |
| Hardcoded gas amount | SWC-134 | The transfer() and send() functions forward a fixed amount of 2300 gas. | PASS |
| Unencrypted Private Data | SWC-136 | It is a common misconception that private type variables cannot be read. | PASS |

# SMART CONTRACT ANALYSIS

| | |
|---|---|
| **Started** | Monday Mar 07 2022 00:39:39 GMT+0000 (Coordinated Universal Time) |
| **Finished** | Tuesday Mar 08 2022 00:15:21 GMT+0000 (Coordinated Universal Time) |
| **Mode** | Standard |
| **Main Source File** | MsgSender.sol |

## Detected Issues

| ID | Title | Severity | Status |
|---|---|---|---|
| SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET. | low | acknowledged |
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| SWC-115 | USE OF "TX.ORIGIN" AS A PART OF AUTHORIZATION CONTROL. | low | acknowledged |
| SWC-115 | USE OF TX.ORIGIN AS A PART OF AUTHORIZATION CONTROL. | low | acknowledged |

# SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 241

## low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "burnTax" is internal. Other possible visibility settings are public and private.

## Source File

- MsgSender.sol

## Locations

```
240
241   uint burnTax;
242   uint feeTax;
243   bool openManager;
244   bool openFee;
245
```

# SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 242

## low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "feeTax" is internal. Other possible visibility settings are public and private.

## Source File

- MsgSender.sol

## Locations

```
241   uint burnTax;
242   uint feeTax;
243   bool openManager;
244   bool openFee;
245
246
```

# SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 243

## low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "openManager" is internal. Other possible visibility settings are public and private.

## Source File

- MsgSender.sol

## Locations

```
242   uint feeTax;
243   bool openManager;
244   bool openFee;
245
246   event NewPendingGov(address oldPendingGov, address newPendingGov);
247
```

# SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 244

## low SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "openFee" is internal. Other possible visibility settings are public and private.

## Source File

- MsgSender.sol

## Locations

```
243   bool openManager;
244   bool openFee;
245
246   event NewPendingGov(address oldPendingGov, address newPendingGov);
247
248
```

# SWC-115 | USE OF "TX.ORIGIN" AS A PART OF AUTHORIZATION CONTROL.

LINE 262

## low SEVERITY

Using "tx.origin" as a security control can lead to authorization bypass vulnerabilities. Consider using "msg.sender" unless you really know what you are doing.

## Source File

- MsgSender.sol

## Locations

```
261   feeTax = 40;
262   governance = tx.origin;
263   openManager = true;
264   openFee = false;
265   super._mint(msg.sender, 100000000 * 10 ** 18);
266
```

# SWC-115 | USE OF TX.ORIGIN AS A PART OF AUTHORIZATION CONTROL.

LINE 84

## low SEVERITY

The tx.origin environment variable has been found to influence a control flow decision. Note that using tx.origin as a security control might cause a situation where a user inadvertently authorizes a smart contract to perform an action on their behalf. It is recommended to use msg.sender instead.

## Source File

- MsgSender.sol

## Locations

```
83   function _mint(address account, uint amount) internal {
84   require(account != address(0), "ERC20: mint to the zero address");
85
86   _beforeTokenTransfer(address(0), account, amount);
87
88
```

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This is a limited report on our findings based on our analysis, in accordance with good industry practice as of the date of this report, in relation to cybersecurity vulnerabilities and issues in the framework and algorithms based on smart contracts, the details of which are set out in this report. In order to get a full view of our analysis, it is crucial for you to read the full report. While we have done our best in conducting our analysis and producing this report, it is important to note that you should not rely on this report and cannot claim against us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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