



MoonStar

# Smart Contract Audit Report

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# AUDITED DETAILS

## Audited Project

Project name	Token ticker	Blockchain
MoonStar	MOONSTAR	Binance Smart Chain

## Addresses

Contract address	0xce5814efff15d53efd8025b9f2006d4d7d640b9b
Contract deployer address	0x418c3d5CD2Ba7E51D32D987FF0810f8fDbc1f992

## Project Website

<https://moonstartoken.com/>

## Codebase

<https://bscscan.com/address/0xce5814efff15d53efd8025b9f2006d4d7d640b9b#code>

# SUMMARY

MoonStar was first conceptualized by a now-anonymous initial developer who forged into the crypto-verse with a new approach to token farming and deflationary currency. The coin began as a supply vs. demand experiment and has blossomed into a full utility, inertly cultivating burn token. The MoonStar Token is the premier static-rewards token for holders. MoonStar capitalizes on an advanced static farming algorithm incentivizing holders to stake prominent positions and hold. Every time a token holder closes a portion of their work, 5% of their close will be broken up among all other wallets, bringing the user more shares for free. With an initial burn of 4,000,000,000,000 (trillion) tokens, 0.4% of the initial supply pool has already been permanently destroyed. The token burn is a strategic anti-inflationary measure that guarantees the value of the coin will not become drowned out by its supply.

## | Contract Summary

### Documentation Quality

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

- The technical description is provided clearly and structured and also don't have any high risk issue.

### Code Quality

The Overall quality of the basecode is standard.

- Standard solidity basecode and rules are already followed by MoonStar 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 739.
- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 127, 159, 182, 183, 218, 254, 481, 722, 722, 722, 722, 723, 723, 742, 742, 742, 742, 743, 743, 743, 743, 874, 876, 913, 959, 978, 984 and 876.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 28.
- SWC-110 SWC-123 | It is recommended to use of revert(), assert(), and require() in Solidity, and the new REVERT opcode in the EVM on lines 875, 876, 876, 960, 960, 961, 962, 1087 and 1088.

# CONCLUSION

We have audited the MoonStar project released on April 2021 to discover issues and identify potential security vulnerabilities in MoonStar 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 found in the MoonStar 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 arithmetic operation issues, a floating pragma is set, a state variable visibility is not set, and out-of-bounds array access which the index access expression can cause an exception in case of the use of an invalid array index value.

# AUDIT RESULT

Article	Category	Description	Result
Default Visibility	SWC-100 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.	ISSUE FOUND
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.	ISSUE FOUND
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 SWC-123	Properly functioning code should never reach a failing assert statement.	ISSUE FOUND
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 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.	PASS
Block values as a proxy for time	SWC-116	Block numbers should not be used for time calculations.	PASS
Signature Unique ID	SWC-117 SWC-121 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 grieving 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	Saturday Apr 03 2021 10:06:20 GMT+0000 (Coordinated Universal Time)
Finished	Sunday Apr 04 2021 14:18:58 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	MoonStar.sol

## Detected Issues

ID	Title	Severity	Status
SWC-101	ARITHMETIC OPERATION "+" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "/" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "/" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "%" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "**" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "**" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "%" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged

SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "***" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "***" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "***" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "***" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "++" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "***" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "++" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "***" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "***" DISCOVERED	low	acknowledged

[illegible]

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 127

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
126 function add(uint256 a, uint256 b) internal pure returns (uint256) {  
127     uint256 c = a + b;  
128     require(c >= a, "SafeMath: addition overflow");  
129  
130     return c;  
131 }
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 159

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
158     require(b <= a, errorMessage);  
159     uint256 c = a - b;  
160  
161     return c;  
162 }  
163
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 182

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
181
182  uint256 c = a * b;
183  require(c / a == b, "SafeMath: multiplication overflow");
184
185  return c;
186
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 183

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
182     uint256 c = a * b;  
183     require(c / a == b, "SafeMath: multiplication overflow");  
184  
185     return c;  
186 }  
187
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 218

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
217   require(b > 0, errorMessage);
218   uint256 c = a / b;
219   // assert(a == b * c + a % b); // There is no case in which this doesn't hold
220
221   return c;
222
```



# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 254

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
253     require(b != 0, errorMessage);
254     return a % b;
255 }
256 }
257
258
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 481

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
480  _owner = address(0);  
481  _lockTime = now + time;  
482  emit OwnershipTransferred(_owner, address(0));  
483  }  
484  
485
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 722

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
721  uint256 private constant MAX = ~uint256(0);
722  uint256 private _tTotal = 1000000000 * 10**6 * 10**9;
723  uint256 private _rTotal = (MAX - (MAX % _tTotal));
724  uint256 private _tFeeTotal;
725
726
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 722

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
721  uint256 private constant MAX = ~uint256(0);
722  uint256 private _tTotal = 1000000000 * 10**6 * 10**9;
723  uint256 private _rTotal = (MAX - (MAX % _tTotal));
724  uint256 private _tFeeTotal;
725
726
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 722

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
721 uint256 private constant MAX = ~uint256(0);
722 uint256 private _tTotal = 1000000000 * 10**6 * 10**9;
723 uint256 private _rTotal = (MAX - (MAX % _tTotal));
724 uint256 private _tFeeTotal;
725
726
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 722

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
721  uint256 private constant MAX = ~uint256(0);
722  uint256 private _tTotal = 1000000000 * 10**6 * 10**9;
723  uint256 private _rTotal = (MAX - (MAX % _tTotal));
724  uint256 private _tFeeTotal;
725
726
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 723

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
722 uint256 private _tTotal = 1000000000 * 10**6 * 10**9;  
723 uint256 private _rTotal = (MAX - (MAX % _tTotal));  
724 uint256 private _tFeeTotal;  
725  
726 string private _name = "MoonStar";  
727
```

# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 723

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
722  uint256 private _tTotal = 10000000000 * 10**6 * 10**9;  
723  uint256 private _rTotal = (MAX - (MAX % _tTotal));  
724  uint256 private _tFeeTotal;  
725  
726  string private _name = "MoonStar";  
727
```



# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 742

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
741
742  uint256 public _maxTxAmount = 5000000 * 10**6 * 10**9;
743  uint256 private numTokensSellToAddToLiquidity = 500000 * 10**6 * 10**9;
744
745  event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);
746
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 742

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
741
742  uint256 public _maxTxAmount = 5000000 * 10**6 * 10**9;
743  uint256 private numTokensSellToAddToLiquidity = 500000 * 10**6 * 10**9;
744
745  event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);
746
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 742

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
741
742  uint256 public _maxTxAmount = 5000000 * 10**6 * 10**9;
743  uint256 private numTokensSellToAddToLiquidity = 500000 * 10**6 * 10**9;
744
745  event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);
746
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 742

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
741
742  uint256 public _maxTxAmount = 5000000 * 10**6 * 10**9;
743  uint256 private numTokensSellToAddToLiquidity = 500000 * 10**6 * 10**9;
744
745  event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);
746
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 743

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
742  uint256 public _maxTxAmount = 5000000 * 10**6 * 10**9;  
743  uint256 private numTokensSellToAddToLiquidity = 500000 * 10**6 * 10**9;  
744  
745  event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);  
746  event SwapAndLiquifyEnabledUpdated(bool enabled);  
747
```

# SWC-101 | ARITHMETIC OPERATION "\*" DISCOVERED

LINE 743

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
742  uint256 public _maxTxAmount = 5000000 * 10**6 * 10**9;  
743  uint256 private numTokensSellToAddToLiquidity = 500000 * 10**6 * 10**9;  
744  
745  event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);  
746  event SwapAndLiquifyEnabledUpdated(bool enabled);  
747
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 743

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
742 uint256 public _maxTxAmount = 5000000 * 10**6 * 10**9;  
743 uint256 private numTokensSellToAddToLiquidity = 500000 * 10**6 * 10**9;  
744  
745 event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);  
746 event SwapAndLiquifyEnabledUpdated(bool enabled);  
747
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 743

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
742  uint256 public _maxTxAmount = 5000000 * 10**6 * 10**9;  
743  uint256 private numTokensSellToAddToLiquidity = 500000 * 10**6 * 10**9;  
744  
745  event MinTokensBeforeSwapUpdated(uint256 minTokensBeforeSwap);  
746  event SwapAndLiquifyEnabledUpdated(bool enabled);  
747
```



# SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 874

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
873   require(!_isExcluded[account], "Account is already excluded");
874   for (uint256 i = 0; i < _excluded.length; i++) {
875       if (_excluded[i] == account) {
876           _excluded[i] = _excluded[_excluded.length - 1];
877           _tOwned[account] = 0;
878       }
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 876

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
875     if (_excluded[i] == account) {  
876         _excluded[i] = _excluded[_excluded.length - 1];  
877         _tOwned[account] = 0;  
878         _isExcluded[account] = false;  
879         _excluded.pop();  
880     }
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 913

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
912     _maxTxAmount = _tTotal.mul(maxTxPercent).div(  
913     10**2  
914     );  
915 }  
916  
917
```

# SWC-101 | ARITHMETIC OPERATION "++" DISCOVERED

LINE 959

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
958     uint256 tSupply = _tTotal;
959     for (uint256 i = 0; i < _excluded.length; i++) {
960         if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return
            (_rTotal, _tTotal);
961         rSupply = rSupply.sub(_rOwned[_excluded[i]]);
962         tSupply = tSupply.sub(_tOwned[_excluded[i]]);
963     }
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 978

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
977     return _amount.mul(_taxFee).div(  
978         10**2  
979     );  
980 }  
981  
982
```

# SWC-101 | ARITHMETIC OPERATION "\*\*" DISCOVERED

LINE 984

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
983     return _amount.mul(_liquidityFee).div(  
984         10**2  
985     );  
986 }  
987  
988
```

# SWC-101 | COMPILER-REWRITABLE "<UINT> - 1" DISCOVERED

LINE 876

## low SEVERITY

This plugin produces issues to support false positive discovery within mythril.

## Source File

- MoonStar.sol

## Locations

```
875     if (_excluded[i] == account) {  
876         _excluded[i] = _excluded[_excluded.length - 1];  
877         _tOwned[account] = 0;  
878         _isExcluded[account] = false;  
879         _excluded.pop();  
880     }
```

## SWC-103 | A FLOATING PRAGMA IS SET.

LINE 28

### low SEVERITY

The current pragma Solidity directive is `""^0.6.12""`. It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

### Source File

- MoonStar.sol

### Locations

```
27
28  pragma solidity ^0.6.12;
29  // SPDX-License-Identifier: Unlicensed
30  interface IERC20 {
31
32
```



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

LINE 739

### low SEVERITY

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

### Source File

- MoonStar.sol

### Locations

```
738
739  bool inSwapAndLiquify;
740  bool public swapAndLiquifyEnabled = true;
741
742  uint256 public _maxTxAmount = 5000000 * 10**6 * 10**9;
743
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 875

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- MoonStar.sol

### Locations

```
874   for (uint256 i = 0; i < _excluded.length; i++) {  
875     if (_excluded[i] == account) {  
876       _excluded[i] = _excluded[_excluded.length - 1];  
877       _tOwned[account] = 0;  
878       _isExcluded[account] = false;  
879     }
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 876

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- MoonStar.sol

### Locations

```
875   if (_excluded[i] == account) {  
876     _excluded[i] = _excluded[_excluded.length - 1];  
877     _tOwned[account] = 0;  
878     _isExcluded[account] = false;  
879     _excluded.pop();  
880
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 876

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- MoonStar.sol

### Locations

```
875     if (_excluded[i] == account) {  
876         _excluded[i] = _excluded[_excluded.length - 1];  
877         _tOwned[account] = 0;  
878         _isExcluded[account] = false;  
879         _excluded.pop();  
880     }
```

# SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 960

## low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

## Source File

- MoonStar.sol

## Locations

```
959   for (uint256 i = 0; i < _excluded.length; i++) {  
960     if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return  
      (_rTotal, _tTotal);  
961     rSupply = rSupply.sub(_rOwned[_excluded[i]]);  
962     tSupply = tSupply.sub(_tOwned[_excluded[i]]);  
963   }  
964
```

# SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 960

## low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

## Source File

- MoonStar.sol

## Locations

```
959   for (uint256 i = 0; i < _excluded.length; i++) {  
960     if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return  
      (_rTotal, _tTotal);  
961     rSupply = rSupply.sub(_rOwned[_excluded[i]]);  
962     tSupply = tSupply.sub(_tOwned[_excluded[i]]);  
963   }  
964
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 961

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- MoonStar.sol

### Locations

```
960  if (_rOwned[_excluded[i]] > rSupply || _tOwned[_excluded[i]] > tSupply) return
    (_rTotal, _tTotal);
961  rSupply = rSupply.sub(_rOwned[_excluded[i]]);
962  tSupply = tSupply.sub(_tOwned[_excluded[i]]);
963  }
964  if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
965
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 962

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- MoonStar.sol

### Locations

```
961   rSupply = rSupply.sub(_rOwned[_excluded[i]]);
962   tSupply = tSupply.sub(_tOwned[_excluded[i]]);
963   }
964   if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
965   return (rSupply, tSupply);
966
```



## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1087

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- MoonStar.sol

### Locations

```
1086     address[] memory path = new address[](2);
1087     path[0] = address(this);
1088     path[1] = uniswapV2Router.WETH();
1089
1090     _approve(address(this), address(uniswapV2Router), tokenAmount);
1091
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1088

### low SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

### Source File

- MoonStar.sol

### Locations

```
1087     path[0] = address(this);  
1088     path[1] = uniswapV2Router.WETH();  
1089  
1090     _approve(address(this), address(uniswapV2Router), tokenAmount);  
1091  
1092
```

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