



MUZIX

# Smart Contract Audit Report

# TABLE OF CONTENTS

## Audited Details

- Audited Project
- Blockchain
- Addresses
- Project Website
- Codebase

## Summary

- Contract Summary
- Audit Findings Summary
- Vulnerabilities Summary

## Conclusion

## Audit Results

## Smart Contract Analysis

- Detected Vulnerabilities

## Disclaimer

## About Us

# AUDITED DETAILS

## Audited Project

Project name	Token ticker	Blockchain
MUZIX	MUZIX	Binance Smart Chain

## Addresses

Contract address	0x741Dd749968b4F9c3b10AAe92740EC6F059221D8
Contract deployer address	0x972E8c76B43D0818E90E9183dF8A6d4540Ba931E

## Project Website

<https://muzix.io/>

## Codebase

<https://bscscan.com/address/0x741Dd749968b4F9c3b10AAe92740EC6F059221D8#code>

# SUMMARY

What is muzix? MUZIX is a decentralized platform meant for music artists to Revolutionize the music industry in the form of nft. Our goal is to develop a secure Music community with secure investment where every individual can earn and grow. Music NFTs (non-fungibel tokens) are a great way to invest in your favorite Artist or song. You also get the possibility to earn royalties on full licensed NFTs during our staking protocol in the near future.

## Contract Summary

### Documentation Quality

MUZIX 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 MUZIX 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 959.
- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 213, 227, 242, 243, 256, 268, 283, 297, 311, 325, 341, 364, 387, 413, 927, 927, 997, 997, 1006, 1006, 1018, 1202, 1204, 1244, 1244, 1255, 1255, 1263, 1263, 1270, 1374, 1408, 1416, 1425 and 1204.
- 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 1203, 1204, 1204, 1376, 1377, 1379, 1380, 1526 and 1527.

## CONCLUSION

We have audited the MUZIX project released on January 2023 to discover issues and identify potential security vulnerabilities in MUZIX 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 a satisfactory result with some low-risk issues.

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Outdated Compiler Version	SWC-102	It is recommended to use a recent version of the Solidity compiler.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

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 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 <code>abi.encodePacked()</code> with multiple variable length arguments can, in certain situations, lead to a hash collision.	PASS
Hardcoded gas amount	SWC-134	The <code>transfer()</code> and <code>send()</code> 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	Wednesday Jan 25 2023 01:49:04 GMT+0000 (Coordinated Universal Time)
Finished	Thursday Jan 26 2023 05:18:46 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	LiquidityGeneratorToken.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
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

LINE 213

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
212     unchecked {
213         uint256 c = a + b;
214         if (c < a) return (false, 0);
215         return (true, c);
216     }
217
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 227

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
226     if (b > a) return (false, 0);
227     return (true, a - b);
228   }
229 }
230
231
```

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

LINE 242

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
241   if (a == 0) return (true, 0);
242   uint256 c = a * b;
243   if (c / a != b) return (false, 0);
244   return (true, c);
245   }
246
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 243

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
242     uint256 c = a * b;
243     if (c / a != b) return (false, 0);
244     return (true, c);
245 }
246 }
247
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 256

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
255     if (b == 0) return (false, 0);
256     return (true, a / b);
257   }
258 }
259
260
```



# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 268

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
267     if (b == 0) return (false, 0);
268     return (true, a % b);
269   }
270 }
271
272
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 283

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
282     function add(uint256 a, uint256 b) internal pure returns (uint256) {
283         return a + b;
284     }
285
286     /**
287
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 297

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
296     function sub(uint256 a, uint256 b) internal pure returns (uint256) {
297         return a - b;
298     }
299
300     /**
301
```

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

LINE 311

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
310     function mul(uint256 a, uint256 b) internal pure returns (uint256) {
311         return a * b;
312     }
313
314     /**
315
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 325

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
324     function div(uint256 a, uint256 b) internal pure returns (uint256) {
325         return a / b;
326     }
327
328     /**
329
```

# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 341

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
340     function mod(uint256 a, uint256 b) internal pure returns (uint256) {
341         return a % b;
342     }
343
344     /**
345
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 364

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
363     require(b <= a, errorMessage);
364     return a - b;
365 }
366 }
367
368
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 387

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
386     require(b > 0, errorMessage);
387     return a / b;
388   }
389 }
390
391
```



# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 413

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
412     require(b > 0, errorMessage);
413     return a % b;
414 }
415 }
416 }
417
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 927

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
926
927  uint256 public constant MAX_FEE = 10**4 / 4;
928
929  mapping(address => uint256) private _rOwned;
930  mapping(address => uint256) private _tOwned;
931
```

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

LINE 927

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
926
927  uint256 public constant MAX_FEE = 10**4 / 4;
928
929  mapping(address => uint256) private _rOwned;
930  mapping(address => uint256) private _tOwned;
931
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 997

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
996     require(  
997     taxFeeBps_ + liquidityFeeBps_ + charityFeeBps_ <= MAX_FEE,  
998     "Total fee is over 25%"  
999     );  
1000  
1001
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 997

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
996     require(  
997     taxFeeBps_ + liquidityFeeBps_ + charityFeeBps_ <= MAX_FEE,  
998     "Total fee is over 25%"  
999     );  
1000  
1001
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 1006

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1005  _tTotal = totalSupply_;
1006  _rTotal = (MAX - (MAX % _tTotal));
1007
1008  _taxFee = taxFeeBps_;
1009  _previousTaxFee = _taxFee;
1010
```

# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 1006

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1005  _tTotal = totalSupply_;
1006  _rTotal = (MAX - (MAX % _tTotal));
1007
1008  _taxFee = taxFeeBps_;
1009  _previousTaxFee = _taxFee;
1010
```

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

LINE 1018

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1017
1018     numTokensSellToAddToLiquidity = totalSupply_.div(10**3); // 0.1%
1019
1020     swapAndLiquifyEnabled = true;
1021
1022
```



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

LINE 1202

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1201   require(!_isExcluded[account], "Account is already excluded");
1202   for (uint256 i = 0; i < _excluded.length; i++) {
1203     if (_excluded[i] == account) {
1204       _excluded[i] = _excluded[_excluded.length - 1];
1205       _tOwned[account] = 0;
1206     }
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 1204

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1203   if (_excluded[i] == account) {
1204     _excluded[i] = _excluded[_excluded.length - 1];
1205     _tOwned[account] = 0;
1206     _isExcluded[account] = false;
1207     _excluded.pop();
1208   }
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 1244

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1243     require(  
1244         _taxFee + _liquidityFee + _charityFee <= MAX_FEE,  
1245         "Total fee is over 25%"  
1246     );  
1247 }  
1248
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 1244

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1243     require(  
1244         _taxFee + _liquidityFee + _charityFee <= MAX_FEE,  
1245         "Total fee is over 25%"  
1246     );  
1247 }  
1248
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 1255

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1254     require(  
1255         _taxFee + _liquidityFee + _charityFee <= MAX_FEE,  
1256         "Total fee is over 25%"  
1257     );  
1258 }  
1259
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 1255

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1254     require(  
1255         _taxFee + _liquidityFee + _charityFee <= MAX_FEE,  
1256         "Total fee is over 25%"  
1257     );  
1258 }  
1259
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 1263

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1262     require(  
1263         _taxFee + _liquidityFee + _charityFee <= MAX_FEE,  
1264         "Total fee is over 25%"  
1265     );  
1266 }  
1267
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 1263

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1262     require(  
1263         _taxFee + _liquidityFee + _charityFee <= MAX_FEE,  
1264         "Total fee is over 25%"  
1265     );  
1266 }  
1267
```



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

LINE 1270

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1269     require(  
1270         _amount >= totalSupply().mul(5).div(10**4),  
1271         "Swapback amount should be at least 0.05% of total supply"  
1272     );  
1273     numTokensSellToAddToLiquidity = _amount;  
1274
```

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

LINE 1374

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1373     uint256 tSupply = _tTotal;
1374     for (uint256 i = 0; i < _excluded.length; i++) {
1375         if (
1376             _rOwned[_excluded[i]] > rSupply ||
1377             _tOwned[_excluded[i]] > tSupply
1378         )
```

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

LINE 1408

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1407     function calculateTaxFee(uint256 _amount) private view returns (uint256) {
1408         return _amount.mul(_taxFee).div(10**4);
1409     }
1410
1411     function calculateLiquidityFee(uint256 _amount)
1412
```

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

LINE 1416

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1415 {  
1416     return _amount.mul(_liquidityFee).div(10**4);  
1417 }  
1418  
1419 function calculateCharityFee(uint256 _amount)  
1420
```

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

LINE 1425

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1424     if (_charityAddress == address(0)) return 0;
1425     return _amount.mul(_charityFee).div(10**4);
1426 }
1427
1428 function removeAllFee() private {
1429
```

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

LINE 1204

## low SEVERITY

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

## Source File

- LiquidityGeneratorToken.sol

## Locations

```
1203   if (_excluded[i] == account) {
1204     _excluded[i] = _excluded[_excluded.length - 1];
1205     _tOwned[account] = 0;
1206     _isExcluded[account] = false;
1207     _excluded.pop();
1208   }
```

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

LINE 959

### 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

- LiquidityGeneratorToken.sol

### Locations

```
958
959  bool inSwapAndLiquify;
960  bool public swapAndLiquifyEnabled;
961
962  uint256 private numTokensSellToAddToLiquidity;
963
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1203

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1202 for (uint256 i = 0; i < _excluded.length; i++) {  
1203   if (_excluded[i] == account) {  
1204     _excluded[i] = _excluded[_excluded.length - 1];  
1205     _tOwned[account] = 0;  
1206     _isExcluded[account] = false;  
1207   }
```



## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1204

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1203   if (_excluded[i] == account) {  
1204     _excluded[i] = _excluded[_excluded.length - 1];  
1205     _tOwned[account] = 0;  
1206     _isExcluded[account] = false;  
1207     _excluded.pop();  
1208   }
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1204

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1203   if (_excluded[i] == account) {  
1204     _excluded[i] = _excluded[_excluded.length - 1];  
1205     _tOwned[account] = 0;  
1206     _isExcluded[account] = false;  
1207     _excluded.pop();  
1208   }
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1376

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1375   if (  
1376     _rOwned[_excluded[i]] > rSupply ||  
1377     _tOwned[_excluded[i]] > tSupply  
1378   ) return (_rTotal, _tTotal);  
1379   rSupply = rSupply.sub(_rOwned[_excluded[i]]);  
1380
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1377

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1376  _rOwned[_excluded[i]] > rSupply ||  
1377  _tOwned[_excluded[i]] > tSupply  
1378  ) return (_rTotal, _tTotal);  
1379  rSupply = rSupply.sub(_rOwned[_excluded[i]]);  
1380  tSupply = tSupply.sub(_tOwned[_excluded[i]]);  
1381
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1379

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1378 ) return (_rTotal, _tTotal);
1379 rSupply = rSupply.sub(_rOwned[_excluded[i]]);
1380 tSupply = tSupply.sub(_tOwned[_excluded[i]]);
1381 }
1382 if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
1383
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1380

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1379     rSupply = rSupply.sub(_rOwned[_excluded[i]]);
1380     tSupply = tSupply.sub(_tOwned[_excluded[i]]);
1381   }
1382   if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
1383   return (rSupply, tSupply);
1384
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1526

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1525     address[] memory path = new address[](2);
1526     path[0] = address(this);
1527     path[1] = uniswapV2Router.WETH();
1528
1529     _approve(address(this), address(uniswapV2Router), tokenAmount);
1530
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1527

### low SEVERITY

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

### Source File

- LiquidityGeneratorToken.sol

### Locations

```
1526 path[0] = address(this);
1527 path[1] = uniswapV2Router.WETH();
1528
1529 _approve(address(this), address(uniswapV2Router), tokenAmount);
1530
1531
```



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