



Harmony

# Smart Contract Audit Report

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# AUDITED DETAILS

## Audited Project

Project name	Token ticker	Blockchain
Harmony ໘໘	HARM	Ethereum

## Addresses

Contract address	0xb8f78ae3df5c541657161194ddbd0c5b44d1bee9
Contract deployer address	0x807d4436F22d3AAeF096Be582cDA53fd89D8C518

## Project Website

<https://harmonytoken.org/>

## Codebase

<https://etherscan.io/address/0xb8f78ae3df5c541657161194ddbd0c5b44d1bee9#code>

# SUMMARY

Harmony is setting a new trend. The dev is creating excitement by only communicating via etherscan. he releases encrypted messages and thats the way how he likes to talk. aswell he is updating the medium regulary ,where he talks about a love story. He combines love with being mystical. The community loves this and they keep becoming stronger and are growing every single day. they love that the project is 100% community driven and they trust their dev because he never let them down. Aswell they plan to become a DAO in the future - to give the power back to the people.

## Contract Summary

### Documentation Quality

Harmony [ ] 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 Harmony [ ] with the discovery of several low issues.

### Test Coverage

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

## Audit Findings Summary

- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 86, 101, 109, 110, 124, 178, 178, 179, 179, 211, 211, 212, 212, 213, 213, 362, 442 and 601.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 15.
- 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 408, 409, 443 and 602.

## CONCLUSION

We have audited the Harmony `00` project released on August 2022 to discover issues and identify potential security vulnerabilities in Harmony `00` 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 Harmony `00` 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 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.	PASS
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 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	Tuesday Aug 30 2022 09:22:36 GMT+0000 (Coordinated Universal Time)
Finished	Wednesday Aug 31 2022 11:28:19 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	Harmony.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-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 86

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
85  function add(uint256 a, uint256 b) internal pure returns (uint256) {
86  uint256 c = a + b;
87  require(c >= a, "SafeMath: addition overflow");
88  return c;
89  }
90
```

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

LINE 101

### low SEVERITY

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

### Source File

- Harmony.sol

### Locations

```
100   require(b <= a, errorMessage);
101   uint256 c = a - b;
102   return c;
103   }
104
105
```

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

LINE 109

### low SEVERITY

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

### Source File

- Harmony.sol

### Locations

```
108     }
109     uint256 c = a * b;
110     require(c / a == b, "SafeMath: multiplication overflow");
111     return c;
112     }
113 }
```

# SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 110

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
109 uint256 c = a * b;
110 require(c / a == b, "SafeMath: multiplication overflow");
111 return c;
112 }
113
114
```

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

LINE 124

### low SEVERITY

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

### Source File

- Harmony.sol

### Locations

```
123   require(b > 0, errorMessage);
124   uint256 c = a / b;
125   return c;
126   }
127   }
128
```

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

LINE 178

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
177 uint256 private constant MAX = ~uint256(0);
178 uint256 private constant _tTotal = 4200000000000 * 10**9;
179 uint256 private _rTotal = (MAX - (MAX % _tTotal));
180 uint256 private _tFeeTotal;
181 uint256 public launchBlock;
182
```



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

LINE 178

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
177 uint256 private constant MAX = ~uint256(0);
178 uint256 private constant _tTotal = 4200000000000 * 10**9;
179 uint256 private _rTotal = (MAX - (MAX % _tTotal));
180 uint256 private _tFeeTotal;
181 uint256 public launchBlock;
182
```

# SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 179

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
178 uint256 private constant _tTotal = 4200000000000 * 10**9;
179 uint256 private _rTotal = (MAX - (MAX % _tTotal));
180 uint256 private _tFeeTotal;
181 uint256 public launchBlock;
182
183
```

# SWC-101 | ARITHMETIC OPERATION "%" DISCOVERED

LINE 179

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
178 uint256 private constant _tTotal = 4200000000000 * 10**9;  
179 uint256 private _rTotal = (MAX - (MAX % _tTotal));  
180 uint256 private _tFeeTotal;  
181 uint256 public launchBlock;  
182  
183
```

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

LINE 211

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
210
211  uint256 public _maxTxAmount = 84000000000 * 10**9;
212  uint256 public _maxWalletSize = 84000000000 * 10**9;
213  uint256 public _swapTokensAtAmount = 42000000 * 10**9;
214
215
```

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

LINE 211

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
210
211  uint256 public _maxTxAmount = 84000000000 * 10**9;
212  uint256 public _maxWalletSize = 84000000000 * 10**9;
213  uint256 public _swapTokensAtAmount = 42000000 * 10**9;
214
215
```

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

LINE 212

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
211 uint256 public _maxTxAmount = 84000000000 * 10**9;  
212 uint256 public _maxWalletSize = 84000000000 * 10**9;  
213 uint256 public _swapTokensAtAmount = 42000000 * 10**9;  
214  
215 event MaxTxAmountUpdated(uint256 _maxTxAmount);  
216
```

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

LINE 212

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
211 uint256 public _maxTxAmount = 84000000000 * 10**9;  
212 uint256 public _maxWalletSize = 84000000000 * 10**9;  
213 uint256 public _swapTokensAtAmount = 42000000 * 10**9;  
214  
215 event MaxTxAmountUpdated(uint256 _maxTxAmount);  
216
```

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

LINE 213

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
212 uint256 public _maxWalletSize = 84000000000 * 10**9;  
213 uint256 public _swapTokensAtAmount = 42000000 * 10**9;  
214  
215 event MaxTxAmountUpdated(uint256 _maxTxAmount);  
216 modifier lockTheSwap {  
217
```



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

LINE 213

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
212 uint256 public _maxWalletSize = 84000000000 * 10**9;  
213 uint256 public _swapTokensAtAmount = 42000000 * 10**9;  
214  
215 event MaxTxAmountUpdated(uint256 _maxTxAmount);  
216 modifier lockTheSwap {  
217
```

# SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 362

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
361     if(to != uniswapV2Pair) {  
362         require(balanceOf(to) + amount < _maxWalletSize, "TOKEN: Balance exceeds wallet  
size!");  
363     }  
364  
365     uint256 contractTokenBalance = balanceOf(address(this));  
366
```

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

LINE 442

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
441     function blockBots(address[] memory bots_) public onlyOwner {
442         for (uint256 i = 0; i < bots_.length; i++) {
443             bots[bots_[i]] = true;
444         }
445     }
446
```

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

LINE 601

## low SEVERITY

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

## Source File

- Harmony.sol

## Locations

```
600  function excludeMultipleAccountsFromFees(address[] calldata accounts, bool
excluded) public onlyOwner {
601  for(uint256 i = 0; i < accounts.length; i++) {
602  _isExcludedFromFee[accounts[i]] = excluded;
603  }
604  }
605
```

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

LINE 15

### low SEVERITY

The current pragma Solidity directive is ""^0.8.4"". 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

- Harmony.sol

### Locations

```
14 //SPDX-License-Identifier: UNLICENSED
15 pragma solidity ^0.8.4;
16
17 abstract contract Context {
18     function _msgSender() internal view virtual returns (address) {
19
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 408

### low SEVERITY

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

### Source File

- Harmony.sol

### Locations

```
407 address[] memory path = new address[](2);
408 path[0] = address(this);
409 path[1] = uniswapV2Router.WETH();
410 _approve(address(this), address(uniswapV2Router), tokenAmount);
411 uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
412
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 409

### low SEVERITY

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

### Source File

- Harmony.sol

### Locations

```
408 path[0] = address(this);
409 path[1] = uniswapV2Router.WETH();
410 _approve(address(this), address(uniswapV2Router), tokenAmount);
411 uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
412 tokenAmount,
413
```

## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 443

### low SEVERITY

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

### Source File

- Harmony.sol

### Locations

```
442   for (uint256 i = 0; i < bots_.length; i++) {  
443     bots[bots_[i]] = true;  
444   }  
445 }  
446  
447
```



## SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 602

### low SEVERITY

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

### Source File

- Harmony.sol

### Locations

```
601   for(uint256 i = 0; i < accounts.length; i++) {  
602     _isExcludedFromFee[accounts[i]] = excluded;  
603   }  
604 }  
605 }  
606
```

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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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