

# Kuro Shiba Smart Contract Audit Report



12 Jun 2021



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# AUDITED DETAILS

### Audited Project

Project name	Token ticker	Blockchain	
Kuro Shiba	KURO	Harmony	

#### Addresses

Contract address 0x3e018675c0ef63eb361b9ef4bfea3a3294c74c7b	
Contract deployer address	0xD68B99856d08B463a6aaAbACC6377bf5aCB92233

### Project Website

https://beta.kuroshiba.one/

### Codebase

https://explorer.harmony.one/address/0x3e018675c0ef63eb361b9ef4bfea3a3294c74c7b?activeTab=7





# SUMMARY

Kuro Shiba (KURO) is the cutest community token on the Harmony network, offering 5% automatic rewards for holders and exclusive NFT airdrops for liquidity providers!

### Contract Summary

#### **Documentation Quality**

Kuro Shiba 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 Kuro Shiba 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 238.
- SWC-101 | It is recommended to use vetted safe math libraries for arithmetic operations consistently on lines 32, 34, 35, 35, 37, 39, 123, 269, 269, 271, 271, 381, 383, 410, 450, 463, 469 and 383.
- SWC-103 | Pragma statements can be allowed to float when a contract is intended on lines 1.
- 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 382, 383, 383, 451, 451, 452 and 453.



# CONCLUSION

We have audited the Kuro Shiba project released on june 2023 to discover issues and identify potential security vulnerabilities in Kuro Shiba 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 Kuro Shiba 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. 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. It is best practice to set the visibility of state variables explicitly. The default visibility for "BURN\_ADDRESS" is internal. Other possible visibility settings are public and private.



# 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 operationsISSUshould be safe from overflows and underflows.FOUNT	
Outdated Compiler Version	SWC-102	It is recommended to use a recent version of the Solidity compiler.	
Floating Pragma	SWC-103	Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly.	
Unchecked Call Return Value	SWC-104	The return value of a message call should be checked.	
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.	
Reentrancy	SWC-107	Check effect interaction pattern should be followed if the code performs recursive call.	
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. PAS	
Delegate call to Untrusted Callee	SWC-112	Delegatecalls should only be allowed to trusted addresses.	



DoS (Denial of Service)	SWC-113 SWC-128	Execution of the code should never be blocked by a specific contract state unless required.	
Race Conditions	SWC-114	Race Conditions and Transactions Order Dependency should not be possible.	
Authorization through tx.origin	SWC-115	tx.origin should not be used for authorization.	
Block values as a proxy for time	SWC-116	Block numbers should not be used for time calculations.	
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.	
Incorrect Constructor Name	SWC-118	Constructors are special functions that are called only once during the contract creation.	
Shadowing State Variable	SWC-119	State variables should not be shadowed.	
Weak Sources of Randomness	SWC-120	WC-120 Random values should never be generated from Chain Attributes or be predictable.	
Write to Arbitrary Storage Location	SWC-124 user or contract accounts may write to sensitive storage		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.	
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.	
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.	
Unused variables	bles SWC-131 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.	
Hash Collisions VariableUsing abi.encodePacked() with multiple variable length arguments can, in certain situations, lead to a hash collision.		PASS	
Hardcoded gas amount	SWC-134	C-134 The transfer() and send() functions forward a fixed amount of 2300 gas.	
Unencrypted Private Data	SWC-136	It is a common misconception that private type variables cannot be read.	PASS



## **SMART CONTRACT ANALYSIS**

Started	Friday Jun 11 2021 10:20:26 GMT+0000 (Coordinated Universal Time)		
Finished	Saturday Jun 12 2021 03:28:50 GMT+0000 (Coordinated Universal Time)		
Mode	Standard		
Main Source File	NotSafeMoon.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	COMPILER-REWRITABLE " <uint> - 1" DISCOVERED</uint>	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
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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



LINE 32

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
31 library SafeMath {
32 function add(uint256 a, uint256 b) internal pure returns (uint256) {uint256 c = a +
b; require(c >= a, "SafeMath: addition overflow"); return c;}
33 function sub(uint256 a, uint256 b) internal pure returns (uint256) {return sub(a, b,
"SafeMath: subtraction overflow");}
34 function sub(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {require(b <= a, errorMessage);uint256 c = a - b;return c;}
35 function mul(uint256 a, uint256 b) internal pure returns (uint256) {if (a == 0)
{return 0;}uint256 c = a * b;require(c / a == b, "SafeMath: multiplication
overflow");return c;}
36</pre>
```



LINE 34

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
function sub(uint256 a, uint256 b) internal pure returns (uint256) {return sub(a, b,
33
"SafeMath: subtraction overflow");}
   function sub(uint256 a, uint256 b, string memory errorMessage) internal pure returns
34
(uint256) {require(b <= a, errorMessage);uint256 c = a - b;return c;}</pre>
   function mul(uint256 a, uint256 b) internal pure returns (uint256) {if (a == 0)
35
{return 0;}uint256 c = a * b;require(c / a == b, "SafeMath: multiplication
overflow");return c;}
36 function div(uint256 a, uint256 b) internal pure returns (uint256) {return div(a, b,
"SafeMath: division by zero");}
   function div(uint256 a, uint256 b, string memory errorMessage) internal pure returns
37
(uint256) {require(b > 0, errorMessage);uint256 c = a / b;return c;}
38
```





LINE 35

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
34 function sub(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {require(b <= a, errorMessage);uint256 c = a - b;return c;}
35 function mul(uint256 a, uint256 b) internal pure returns (uint256) {if (a == 0)
{return 0;}uint256 c = a * b;require(c / a == b, "SafeMath: multiplication
overflow");return c;}
36 function div(uint256 a, uint256 b) internal pure returns (uint256) {return div(a, b,
"SafeMath: division by zero");}
37 function div(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {require(b > 0, errorMessage);uint256 c = a / b;return c;}
38 function mod(uint256 a, uint256 b) internal pure returns (uint256) {return mod(a, b,
"SafeMath: modulo by zero");}
39
```





LINE 35

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
34 function sub(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {require(b <= a, errorMessage);uint256 c = a - b;return c;}
35 function mul(uint256 a, uint256 b) internal pure returns (uint256) {if (a == 0)
{return 0;}uint256 c = a * b;require(c / a == b, "SafeMath: multiplication
overflow");return c;}
36 function div(uint256 a, uint256 b) internal pure returns (uint256) {return div(a, b,
"SafeMath: division by zero");}
37 function div(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {require(b > 0, errorMessage);uint256 c = a / b;return c;}
38 function mod(uint256 a, uint256 b) internal pure returns (uint256) {return mod(a, b,
"SafeMath: modulo by zero");}
39
```





LINE 37

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
36 function div(uint256 a, uint256 b) internal pure returns (uint256) {return div(a, b,
"SafeMath: division by zero");}
37 function div(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {require(b > 0, errorMessage);uint256 c = a / b;return c;}
38 function mod(uint256 a, uint256 b) internal pure returns (uint256) {return mod(a, b,
"SafeMath: modulo by zero");}
39 function mod(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {require(b != 0, errorMessage);return a % b;}
40 }
41
```



LINE 39

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
38 function mod(uint256 a, uint256 b) internal pure returns (uint256) {return mod(a, b,
"SafeMath: modulo by zero");}
39 function mod(uint256 a, uint256 b, string memory errorMessage) internal pure returns
(uint256) {require(b != 0, errorMessage);return a % b;}
40 }
41
42 abstract contract Context {
43
```



**LINE** 123

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
122 __owner = address(0);
123 __lockTime = block.timestamp + time;
124 emit OwnershipTransferred(_owner, address(0));
125 }
126
127
```



**LINE 269** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
268 _burnFee = burnFee_;
269 _tTotal = totalSupply_.mul(10**6).mul(10**uint256(decimals_));
270 _rTotal = MAX.sub(MAX.mod(_tTotal));
271 _maxTxAmount = maxTx_.mul(10**6).mul(10**uint256(decimals_));
272 _rOwned[_msgSender()] = _rTotal;
273
```



**LINE 269** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
268 _burnFee = burnFee_;
269 _tTotal = totalSupply_.mul(10**6).mul(10**uint256(decimals_));
270 _rTotal = MAX.sub(MAX.mod(_tTotal));
271 _maxTxAmount = maxTx_.mul(10**6).mul(10**uint256(decimals_));
272 _rOwned[_msgSender()] = _rTotal;
273
```



**LINE 271** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
270 _rTotal = MAX.sub(MAX.mod(_tTotal));
271 _maxTxAmount = maxTx_.mul(10**6).mul(10**uint256(decimals_));
272 _rOwned[_msgSender()] = _rTotal;
273 IUniswapV2Router02 _uniswapV2Router = IUniswapV2Router02(uniV2RouterAddress_);
274
275
```



**LINE 271** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
270 _rTotal = MAX.sub(MAX.mod(_tTotal));
271 _maxTxAmount = maxTx_.mul(10**6).mul(10**uint256(decimals_));
272 _rOwned[_msgSender()] = _rTotal;
273 IUniswapV2Router02 _uniswapV2Router = IUniswapV2Router02(uniV2RouterAddress_);
274
275
```



**LINE 381** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
380 require(_isExcludedFromReward[account], "Account is already excluded");
381 for (uint256 i = 0; i < _excludedFromReward.length; i++) {
382 if (_excludedFromReward[i] == account) {
383 _excludedFromReward[i] = _excludedFromReward[_excludedFromReward.length - 1];
384 _tOwned[account] = 0;
385
```



**LINE 383** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
382 if (_excludedFromReward[i] == account) {
383 _excludedFromReward[i] = _excludedFromReward[_excludedFromReward.length - 1];
384 _tOwned[account] = 0;
385 _isExcludedFromReward[account] = false;
386 _excludedFromReward.pop();
387
```



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

LINE 410

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol



**LINE 450** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
449 uint256 tSupply = _tTotal;
450 for (uint256 i = 0; i < _excludedFromReward.length; i++) {
451 if (_rOwned[_excludedFromReward[i]] > rSupply || _tOwned[_excludedFromReward[i]] >
tSupply) return (_rTotal, _tTotal);
452 rSupply = rSupply.sub(_rOwned[_excludedFromReward[i]]);
453 tSupply = tSupply.sub(_tOwned[_excludedFromReward[i]]);
454
```



**LINE 463** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
462 return _amount.mul(_rewardFee).div(
463    10**2
464    );
465  }
466
467
```



**LINE 469** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

#### Locations

468 return \_amount.mul(\_burnFee).div(
469 10\*\*2
470 );
471 }
472
473



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

**LINE 383** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
382 if (_excludedFromReward[i] == account) {
383 _excludedFromReward[i] = _excludedFromReward[_excludedFromReward.length - 1];
384 _tOwned[account] = 0;
385 _isExcludedFromReward[account] = false;
386 _excludedFromReward.pop();
387
```



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

LINE 1

#### **IOW SEVERITY**

The current pragma Solidity directive is ""^0.8.0"". 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

- NotSafeMoon.sol

```
0
1 pragma solidity ^0.8.0;
2 // SPDX-License-Identifier: Unlicensed
3
4 interface IERC20 {
5
```



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

**LINE 238** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol



LINE 382

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
381 for (uint256 i = 0; i < _excludedFromReward.length; i++) {
382 if (_excludedFromReward[i] == account) {
383 _excludedFromReward[i] = _excludedFromReward[_excludedFromReward.length - 1];
384 _tOwned[account] = 0;
385 _isExcludedFromReward[account] = false;
386</pre>
```



**LINE 383** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
382 if (_excludedFromReward[i] == account) {
383 _excludedFromReward[i] = _excludedFromReward[_excludedFromReward.length - 1];
384 _tOwned[account] = 0;
385 _isExcludedFromReward[account] = false;
386 _excludedFromReward.pop();
387
```



**LINE 383** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
382 if (_excludedFromReward[i] == account) {
383 _excludedFromReward[i] = _excludedFromReward[_excludedFromReward.length - 1];
384 _tOwned[account] = 0;
385 _isExcludedFromReward[account] = false;
386 _excludedFromReward.pop();
387
```



**LINE 451** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
450 for (uint256 i = 0; i < _excludedFromReward.length; i++) {
451 if (_rOwned[_excludedFromReward[i]] > rSupply || _tOwned[_excludedFromReward[i]] >
tSupply) return (_rTotal, _tTotal);
452 rSupply = rSupply.sub(_rOwned[_excludedFromReward[i]]);
453 tSupply = tSupply.sub(_tOwned[_excludedFromReward[i]]);
454 }
455
```



**LINE 451** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
450 for (uint256 i = 0; i < _excludedFromReward.length; i++) {
451 if (_rOwned[_excludedFromReward[i]] > rSupply || _tOwned[_excludedFromReward[i]] >
tSupply) return (_rTotal, _tTotal);
452 rSupply = rSupply.sub(_rOwned[_excludedFromReward[i]]);
453 tSupply = tSupply.sub(_tOwned[_excludedFromReward[i]]);
454 }
455
```



**LINE 452** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
451 if (_rOwned[_excludedFromReward[i]] > rSupply || _tOwned[_excludedFromReward[i]] >
tSupply) return (_rTotal, _tTotal);
452 rSupply = rSupply.sub(_rOwned[_excludedFromReward[i]]);
453 tSupply = tSupply.sub(_tOwned[_excludedFromReward[i]]);
454 }
455 if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
456</pre>
```



**LINE 453** 

#### **Iow SEVERITY**

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

#### Source File

- NotSafeMoon.sol

```
452 rSupply = rSupply.sub(_rOwned[_excludedFromReward[i]]);
453 tSupply = tSupply.sub(_tOwned[_excludedFromReward[i]]);
454 }
455 if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
456 return (rSupply, tSupply);
457
```



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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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