

FonAl Smart Contract Audit Report



11 Feb 2023



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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain	
FonAl	FAI	Arbitrum	

Addresses

Contract address	0xca848be669070a6a429a400edf2af8b95008951c	
Contract deployer address	0xCa848be669070A6a429a400EdF2Af8B95008951c	

Project Website

https://fonai.app/

Codebase

https://arbiscan.io/address/0xca848be669070a6a429a400edf2af8b95008951c#code



SUMMARY

FonAI is an Artificial Intelligence robot on blockchain that generates digital NFTs from the user's description starting on Arbitrum.

Contract Summary

Documentation Quality

FonAI 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 FonAI 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 475, 507, 530, 531, 566, 602, 668, 672, 684, 691, 700, 924, 924, 925, 930, 930, 931, 931, 932, 932, 1000, 1001, 1001, 1001, 1002, 1007, 1054, 1062, 1108, 1140, 1141, 1152 and 1152.
- 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 1118 and 1119.



CONCLUSION

We have audited the FonAI project released in January 2023 to discover issues and identify potential security vulnerabilities in FonAI 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 FonAI 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 and out-of-bounds array access. The index access expression can cause an exception in case 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 operationsISSUEshould be safe from overflows and underflows.FOUN	
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.	PASS
Unchecked Call Return Value	SWC-104	The return value of a message call should be checked.	PASS
Unprotected Ether Withdrawal	SWC-105	Due to missing or insufficient access controls, malicious parties can withdraw from the contract.	PASS
SELFDESTRUCT Instruction	SWC-106	The contract should not be self-destructible while it has funds belonging to users.	PASS
Reentrancy	SWC-107	Check effect interaction pattern should be followed if the code performs recursive call.	PASS
Uninitialized Storage Pointer	SWC-109	Uninitialized local storage variables can point to unexpected storage locations in the contract.	PASS
Assert Violation	SWC-110 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.	
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.	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.	
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	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.	
Hash Collisions Variable	SWC-133	Using abi.encodePacked() with multiple variable length arguments can, in certain situations, lead to a hash collision.	
Hardcoded gas amount	SWC-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.	





SMART CONTRACT ANALYSIS

Started	Friday Feb 10 2023 12:22:11 GMT+0000 (Coordinated Universal Time)		
Finished	Saturday Feb 11 2023 04:02:18 GMT+0000 (Coordinated Universal Time)		
Mode	Standard		
Main Source File	FonAl.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

SYSFIXED

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

SYSFIXED

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-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged



LINE 475

Iow SEVERITY

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

Source File

- FonAl.sol

```
474 function add(uint256 a, uint256 b) internal pure returns (uint256) {
475 uint256 c = a + b;
476 require(c >= a, "SafeMath: addition overflow");
477
478 return c;
479
```



LINE 507

Iow SEVERITY

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

Source File

- FonAl.sol

```
506 require(b <= a, errorMessage);
507 uint256 c = a - b;
508
509 return c;
510 }
511</pre>
```



LINE 530

Iow SEVERITY

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

Source File

- FonAl.sol

```
529
530 uint256 c = a * b;
531 require(c / a == b, "SafeMath: multiplication overflow");
532
533 return c;
534
```



SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 531

Iow SEVERITY

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

Source File

- FonAl.sol

```
530 uint256 c = a * b;
531 require(c / a == b, "SafeMath: multiplication overflow");
532
533 return c;
534 }
535
```



LINE 566

Iow SEVERITY

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

Source File

- FonAl.sol

```
565 require(b > 0, errorMessage);
566 uint256 c = a / b;
567 // assert(a == b * c + a % b); // There is no case in which this doesn't hold
568
569 return c;
570
```



LINE 602

Iow SEVERITY

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

Source File

- FonAl.sol

```
601 require(b != 0, errorMessage);
602 return a % b;
603 }
604 }
605
606
```



LINE 668

Iow SEVERITY

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

Source File

- FonAl.sol

```
667 function mul(int256 a, int256 b) internal pure returns (int256) {
668 int256 c = a * b;
669
670 // Detect overflow when multiplying MIN_INT256 with -1
671 require(c != MIN_INT256 || (a & MIN_INT256) != (b & MIN_INT256));
672
```



LINE 672

Iow SEVERITY

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

Source File

- FonAl.sol

```
671 require(c != MIN_INT256 || (a & MIN_INT256) != (b & MIN_INT256));
672 require((b == 0) || (c / b == a));
673 return c;
674 }
675 676
```



LINE 684

Iow SEVERITY

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

Source File

- FonAl.sol

```
683 // Solidity already throws when dividing by 0.
684 return a / b;
685 }
686
687 /**
688
```



LINE 691

Iow SEVERITY

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

Source File

- FonAl.sol

```
690 function sub(int256 a, int256 b) internal pure returns (int256) {
691 int256 c = a - b;
692 require((b >= 0 && c <= a) || (b < 0 && c > a));
693 return c;
694 }
695
```



LINE 700

Iow SEVERITY

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

Source File

- FonAl.sol

```
699 function add(int256 a, int256 b) internal pure returns (int256) {
700 int256 c = a + b;
701 require((b >= 0 && c >= a) || (b < 0 && c < a));
702 return c;
703 }
704</pre>
```



LINE 924

Iow SEVERITY

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

Source File

- FonAl.sol

```
923
924 uint256 totalSupply = 1 * 1e6 * 1e5;
925 supply += totalSupply;
926
927 walletDigit = 2;
928
```



LINE 924

Iow SEVERITY

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

Source File

- FonAl.sol

```
923
924 uint256 totalSupply = 1 * 1e6 * 1e5;
925 supply += totalSupply;
926
927 walletDigit = 2;
928
```



LINE 925

Iow SEVERITY

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

Source File

- FonAl.sol

```
924 uint256 totalSupply = 1 * 1e6 * 1e5;
925 supply += totalSupply;
926
927 walletDigit = 2;
928 transDigit = 1;
929
```





LINE 930

Iow SEVERITY

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

Source File

- FonAl.sol

```
929
930 maxTransactionAmount = supply * transDigit / 100;
931 maxWallet = supply * walletDigit / 100;
932 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
933
934
```



LINE 930

Iow SEVERITY

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

Source File

- FonAl.sol

```
929
930 maxTransactionAmount = supply * transDigit / 100;
931 maxWallet = supply * walletDigit / 100;
932 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
933
934
```



LINE 931

Iow SEVERITY

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

Source File

- FonAl.sol

```
930 maxTransactionAmount = supply * transDigit / 100;
931 maxWallet = supply * walletDigit / 100;
932 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
933
934 buyTotalFees = 16;
935
```



LINE 931

Iow SEVERITY

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

Source File

- FonAl.sol

```
930 maxTransactionAmount = supply * transDigit / 100;
931 maxWallet = supply * walletDigit / 100;
932 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
933
934 buyTotalFees = 16;
935
```



LINE 932

Iow SEVERITY

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

Source File

- FonAl.sol

```
931 maxWallet = supply * walletDigit / 100;
932 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
933
934 buyTotalFees = 16;
935 sellTotalFees = 25;
936
```



LINE 932

Iow SEVERITY

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

Source File

- FonAl.sol

```
931 maxWallet = supply * walletDigit / 100;
932 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
933
934 buyTotalFees = 16;
935 sellTotalFees = 25;
936
```



LINE 1000

Iow SEVERITY

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

Source File

- FonAl.sol

```
999 function updateLimits() private {
1000 maxTransactionAmount = supply * transDigit / 100;
1001 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
1002 maxWallet = supply * walletDigit / 100;
1003 }
1004
```



LINE 1000

Iow SEVERITY

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

Source File

- FonAl.sol

```
999 function updateLimits() private {
1000 maxTransactionAmount = supply * transDigit / 100;
1001 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
1002 maxWallet = supply * walletDigit / 100;
1003 }
1004
```



LINE 1001

Iow SEVERITY

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

Source File

- FonAl.sol

```
1000 maxTransactionAmount = supply * transDigit / 100;
1001 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
1002 maxWallet = supply * walletDigit / 100;
1003 }
1004
1005
```



LINE 1001

Iow SEVERITY

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

Source File

- FonAl.sol

```
1000 maxTransactionAmount = supply * transDigit / 100;
1001 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
1002 maxWallet = supply * walletDigit / 100;
1003 }
1004
1005
```



LINE 1002

Iow SEVERITY

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

Source File

- FonAl.sol

```
1001 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
1002 maxWallet = supply * walletDigit / 100;
1003 }
1004
1005
1006
```



LINE 1002

Iow SEVERITY

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

Source File

- FonAl.sol

```
1001 swapTokensAtAmount = supply * 5 / 10000; // 0.05% swap wallet;
1002 maxWallet = supply * walletDigit / 100;
1003 }
1004
1005
1006
```



LINE 1007

Iow SEVERITY

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

Source File

- FonAl.sol

Locations

1006 function updateLimits(uint256 _amount) public onlyOwner {
1007 swapTokensAtAmount = _amount * 1e5; // 0.05% swap wallet;
1008 }
1009
1010 function setAutomatedMarketMakerPair(address pair, bool value) public onlyOwner {
1011



LINE 1054

Iow SEVERITY

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

Source File

- FonAl.sol

```
1053 require(amount <= maxTransactionAmount, "Buy transfer amount exceeds the
maxTransactionAmount.");
1054 require(amount + balanceOf(to) <= maxWallet, "Max wallet exceeded");
1055 }
1056
1057 //when sell
1058</pre>
```



LINE 1062

Iow SEVERITY

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

Source File

- FonAl.sol

```
1061 else if(!_isExcludedMaxTransactionAmount[to]){
1062 require(amount + balanceOf(to) <= maxWallet, "Max wallet exceeded");
1063 }
1064 }
1065 }
1066</pre>
```



LINE 1108

Iow SEVERITY

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

Source File

- FonAl.sol

Locations

1107
1108 amount -= fees;
1109 }
1110
1111 super._transfer(from, to, amount);
1112



LINE 1140

Iow SEVERITY

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

Source File

- FonAl.sol

Locations

1139
1140 if(contractBalance > swapTokensAtAmount * 20){
1141 contractBalance = swapTokensAtAmount * 20;
1142 }
1143
1144



LINE 1141

Iow SEVERITY

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

Source File

- FonAl.sol

Locations

1140 if(contractBalance > swapTokensAtAmount * 20){
1141 contractBalance = swapTokensAtAmount * 20;
1142 }
1143
1144 swapTokensForEth(contractBalance);
1145



LINE 1152

Iow SEVERITY

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

Source File

- FonAl.sol

```
1151 payable(adr).transfer(
1152 (amountWDOGE * amountPercentage) / 100
1153 );
1154 }
1155
1156
```



LINE 1152

Iow SEVERITY

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

Source File

- FonAl.sol

```
1151 payable(adr).transfer(
1152 (amountWDOGE * amountPercentage) / 100
1153 );
1154 }
1155
1156
```



SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1118

Iow SEVERITY

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

Source File

- FonAl.sol

```
1117 address[] memory path = new address[](2);
1118 path[0] = address(this);
1119 path[1] = uniswapV2Router.WETH();
1120
1121 __approve(address(this), address(uniswapV2Router), tokenAmount);
1122
```



SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 1119

Iow SEVERITY

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

Source File

- FonAl.sol

```
1118 path[0] = address(this);
1119 path[1] = uniswapV2Router.WETH();
1120
1121 __approve(address(this), address(uniswapV2Router), tokenAmount);
1122
1123
```



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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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