

FonAl

Smart Contract Audit Report





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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

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

Contract Summary

Documentation Quality

FonAl 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, 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 FonAl project released in January 2023 to discover issues and identify potential security vulnerabilities in FonAl 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 FonAl 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.		
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.	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.	it PASS	
Reentrancy	SWC-107	Check effect interaction pattern should be followed if the code performs recursive call.	d 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.		
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.	
Authorization through tx.origin	SWC-115	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.	
Shadowing State Variable	SWC-119	State variables should not be shadowed.	
Weak Sources of Randomness	SWC-120	Random values should never be generated from Chain Attributes or be predictable.	
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.	
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/.	
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.	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.		
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.	PASS	



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



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



LINE 475

low SEVERITY

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

Source File

- FonAl.sol

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



LINE 507

low 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

low 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
```



LINE 531

low 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

low 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

low 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

low SEVERITY

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

Source File

- FonAl.sol

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



LINE 672

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low 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

low SEVERITY

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

Source File

- FonAl.sol

```
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

low 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

low 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

low SEVERITY

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

Source File

- FonAl.sol

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



LINE 1140

low SEVERITY

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

Source File

- FonAl.sol

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



LINE 1141

low SEVERITY

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

Source File

- FonAl.sol

```
if(contractBalance > swapTokensAtAmount * 20){
    contractBalance = swapTokensAtAmount * 20;
    l142    }
    l143
    swapTokensForEth(contractBalance);
    l145
```



LINE 1152

low 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

low 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

low 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

low 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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