Core AI

Smart Contract Audit Report

SYSFIXED

05 Feb 2023

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
Core AI	CoreAi	Binance Smart Chain

Addresses

Contract address	0x4BD0cf33AA7C6F75Fb4b70438656FFABa2E5986c
Contract deployer address	0x68014a2adC8B950548faDaeD325C5EC88F39e4e5

Project Website

https://www.coreai.tech/

Codebase

https://bscscan.com/address/0x4BD0cf33AA7C6F75Fb4b70438656FFABa2E5986c#code

SUMMARY

CoreAI is an auto trading solution. CoreAI is the next revolution of Auto trading that's integrated with artificial intelligence. Trading is not a thing that can be taken overnight, but with CoreAI, it'll be possible. Our solution focused on support user to prevent lost and gain profit in trading in the fastest way. CoreAI will be the second ChatGPT in trading that will go live in the end of Q1-2023.

Contract Summary

Documentation Quality

Core AI 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 Core AI 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 668, 684, 699, 721, 723, 735, 736, 750, 752, 839, 839, 840, 942, 964, 964, 965, 981 and 1004.
- 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 993 and 994.

CONCLUSION

We have audited the Core AI project released on February-2023 to discover issues and identify potential security vulnerabilities in Core AI 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 Core AI 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 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.	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.	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 abi.encodePacked() with multiple variable length arguments can, in certain situations, lead to a hash collision.	PASS
Hardcoded gas amount	SWC-134	The transfer() and send() 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	Saturday Feb 04 2023 09:31:01 GMT+0000 (Coordinated Universal Time)
Finished	Sunday Feb 05 2023 01:56:59 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	CoreAI.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-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 668

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
667   unchecked {
668   _approve(sender, _msgSender(), currentAllowance - amount);
669   }
670   }
671
672
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 684

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
683   spender,
684   _allowances[_msgSender()][spender] + addedValue
685   );
686   return true;
687   }
688
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 699

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
698   unchecked {
699   _approve(_msgSender(), spender, currentAllowance - subtractedValue);
700   }
701
702   return true;
703
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 721

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
720   unchecked {
721   _balances[sender] = senderBalance - amount;
722   }
723   _balances[recipient] += amount;
724
725
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 723

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
722   }
723   _balances[recipient] += amount;
724
725   emit Transfer(sender, recipient, amount);
726
727
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 735

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
734
735   _totalSupply += amount;
736   _balances[account] += amount;
737   emit Transfer(address(0), account, amount);
738
739
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 736

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
735   _totalSupply += amount;
736   _balances[account] += amount;
737   emit Transfer(address(0), account, amount);
738
739   _afterTokenTransfer(address(0), account, amount);
740
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 750

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
749   unchecked {
750   _balances[account] = accountBalance - amount;
751   }
752   _totalSupply -= amount;
753
754
```

SWC-101 | ARITHMETIC OPERATION "-=" DISCOVERED

LINE 752

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
751   }
752   _totalSupply -= amount;
753
754   emit Transfer(account, address(0), amount);
755
756
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 839

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
838
839   _mint(owner(), 1e8 * (10 ** decimals()));
840   swapTokensAtAmount = totalSupply() / 5_000;
841
842   tradingEnabled = false;
843
```

SWC-101 | ARITHMETIC OPERATION "**" DISCOVERED

LINE 839

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
838
839   _mint(owner(), 1e8 * (10 ** decimals()));
840   swapTokensAtAmount = totalSupply() / 5_000;
841
842   tradingEnabled = false;
843
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 840

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
839   _mint(owner(), 1e8 * (10 ** decimals()));
840   swapTokensAtAmount = totalSupply() / 5_000;
841
842   tradingEnabled = false;
843   swapEnabled = false;
844
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 942

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
941   to == uniswapV2Pair &&
942   marketingFeeOnBuy + marketingFeeOnSell > 0 &&
943   swapEnabled
944   ) {
945   swapping = true;
946
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 964

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
963   if (_totalFees > 0) {
964   uint256 fees = (amount * _totalFees) / 100;
965   amount = amount - fees;
966   super._transfer(from, address(this), fees);
967   }
968
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 964

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
963   if (_totalFees > 0) {
964   uint256 fees = (amount * _totalFees) / 100;
965   amount = amount - fees;
966   super._transfer(from, address(this), fees);
967   }
968
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 965

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
964   uint256 fees = (amount * _totalFees) / 100;
965   amount = amount - fees;
966   super._transfer(from, address(this), fees);
967   }
968
969
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 981

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
980   require(
981   newAmount > totalSupply() / 1_000_000,
982   "SwapTokensAtAmount must be greater than 0.0001% of total supply"
983   );
984   swapTokensAtAmount = newAmount;
985
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 1004

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
1003
1004   uint256 newBalance = address(this).balance - initialBalance;
1005
1006   payable(marketingWallet).sendValue(newBalance);
1007
1008
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 993

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
992   address[] memory path = new address[](2);
993   path[0] = address(this);
994   path[1] = uniswapV2Router.WETH();
995
996   uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
997
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 994

low SEVERITY

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

Source File

- CoreAI.sol

Locations

```
993   path[0] = address(this);
994   path[1] = uniswapV2Router.WETH();
995
996   uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
997   tokenAmount,
998
```

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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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