BullDogeAI

Smart Contract Audit Report

SYSFIXED

01 Feb 2023

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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain
BullDogeAI	BDA	Binance Smart Chain

Addresses

Contract address	0x29b6F1f4f6513A6363E32D092Bf95319eC5266B9
Contract deployer address	0xE449936B5a82dD2c24cA03D9DBcA2176425D0A3b

Project Website

https://bulldogeai.com/

Codebase

https://bscscan.com/address/0x29b6F1f4f6513A6363E32D092Bf95319eC5266B9#code

SUMMARY

BullDogeAI is based on the success of OpenAI's latest release of ChatGPT. BullDogeAI can answer questions, helping you with tasks like composing emails, writing essays, writing code, and writing content.

Contract Summary

Documentation Quality

BullDogeAI 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 BullDogeAI 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 138, 148, 156, 175, 177, 189, 190, 204, 206, 638, 638, 639, 639, 700, 700, 702, 702, 705, 744, 748, 749 and 765.
- 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 578, 579, 754 and 755.

CONCLUSION

We have audited the BullDogeAI project released on January 2023 to discover issues and identify potential security vulnerabilities in BullDogeAI 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 BullDogeAI 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	Tuesday Jan 31 2023 05:30:20 GMT+0000 (Coordinated Universal Time)
Finished	Wednesday Feb 01 2023 17:02:50 GMT+0000 (Coordinated Universal Time)
Mode	Standard
Main Source File	BullDogeAIToken.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-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 138

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
137   unchecked {
138   _approve(sender, _msgSender(), currentAllowance - amount);
139   }
140   }
141
142
```

SWC-101 | ARITHMETIC OPERATION "+" DISCOVERED

LINE 148

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
147   function increaseAllowance(address spender, uint256 addedValue) public virtual
returns (bool) {
148   _approve(_msgSender(), spender, _allowances[_msgSender()][spender] + addedValue);
149   return true;
150   }
151
152
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 156

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
155   unchecked {
156   _approve(_msgSender(), spender, currentAllowance - subtractedValue);
157   }
158
159   return true;
160
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 175

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
174   unchecked {
175   _balances[sender] = senderBalance - amount;
176   }
177   _balances[recipient] += amount;
178
179
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 177

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
176   }
177   _balances[recipient] += amount;
178
179   emit Transfer(sender, recipient, amount);
180
181
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 189

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
188
189   _totalSupply += amount;
190   _balances[account] += amount;
191   emit Transfer(address(0), account, amount);
192
193
```

SWC-101 | ARITHMETIC OPERATION "+=" DISCOVERED

LINE 190

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
189   _totalSupply += amount;
190   _balances[account] += amount;
191   emit Transfer(address(0), account, amount);
192
193   _afterTokenTransfer(address(0), account, amount);
194
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 204

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
203   unchecked {
204   _balances[account] = accountBalance - amount;
205   }
206   _totalSupply -= amount;
207
208
```

SWC-101 | ARITHMETIC OPERATION "-=" DISCOVERED

LINE 206

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
205   }
206   _totalSupply -= amount;
207
208   emit Transfer(account, address(0), amount);
209
210
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 638

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
637
638   _mint(owner(), 100_000_000 * 10**decimals());
639   swapTokensAtAmount = 3000 * 10**decimals();
640   }
641
642
```

SWC-101 | ARITHMETIC OPERATION "**" DISCOVERED

LINE 638

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
637
638   _mint(owner(), 100_000_000 * 10**decimals());
639   swapTokensAtAmount = 3000 * 10**decimals();
640   }
641
642
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 639

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
638   _mint(owner(), 100_000_000 * 10**decimals());
639   swapTokensAtAmount = 3000 * 10**decimals();
640   }
641
642   receive() external payable {}
643
```

SWC-101 | ARITHMETIC OPERATION "**" DISCOVERED

LINE 639

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
638   _mint(owner(), 100_000_000 * 10**decimals());
639   swapTokensAtAmount = 3000 * 10**decimals();
640   }
641
642   receive() external payable {}
643
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 700

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
699   if (takeFee) {
700   uint256 fees = (amount * taxFee) / 100;
701   if (isBot(from, to)) {
702   fees = (amount * 45) / 100;
703   }
704
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 700

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
699   if (takeFee) {
700   uint256 fees = (amount * taxFee) / 100;
701   if (isBot(from, to)) {
702   fees = (amount * 45) / 100;
703   }
704
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 702

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
701   if (isBot(from, to)) {
702   fees = (amount * 45) / 100;
703   }
704
705   amount = amount - fees;
706
```

SWC-101 | ARITHMETIC OPERATION "*" DISCOVERED

LINE 702

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
701   if (isBot(from, to)) {
702   fees = (amount * 45) / 100;
703   }
704
705   amount = amount - fees;
706
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 705

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
704
705   amount = amount - fees;
706
707   if (from == uniswapV2Pair) {
708   super._transfer(from, address(this), fees);
709
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 744

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
743   function isBot(address from, address to) private view returns (bool) {
744   return block.timestamp - launchTime < 10 && launchTime != 0 && (uniswapV2Pair == to
|| uniswapV2Pair == from);
745   }
746
747   function swapAndLiquify(uint256 tokens) private {
748
```

SWC-101 | ARITHMETIC OPERATION "/" DISCOVERED

LINE 748

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
747   function swapAndLiquify(uint256 tokens) private {
748   uint256 half = tokens / 2;
749   uint256 otherHalf = tokens - half;
750
751   uint256 initialBalance = address(this).balance;
752
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 749

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
748   uint256 half = tokens / 2;
749   uint256 otherHalf = tokens - half;
750
751   uint256 initialBalance = address(this).balance;
752
753
```

SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 765

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
764
765   uint256 newBalance = address(this).balance - initialBalance;
766
767   uniswapV2Router.addLiquidityETH{ value: newBalance }(address(this), otherHalf, 0,
0, owner(), block.timestamp);
768
769
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 578

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
577   address[] memory path = new address[](2);
578   path[0] = address(token);
579   path[1] = dexRouter.WETH();
580
581   uint256 balance = token.balanceOf(address(this));
582
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 579

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
578   path[0] = address(token);
579   path[1] = dexRouter.WETH();
580
581   uint256 balance = token.balanceOf(address(this));
582
583
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 754

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
753   address[] memory path = new address[](2);
754   path[0] = address(this);
755   path[1] = uniswapV2Router.WETH();
756
757   uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
758
```

SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 755

low SEVERITY

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

Source File

- BullDogeAIToken.sol

Locations

```
754   path[0] = address(this);
755   path[1] = uniswapV2Router.WETH();
756
757   uniswapV2Router.swapExactTokensForETHSupportingFeeOnTransferTokens(
758   half,
759
```

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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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