



SAFU Audit

Smart Contract Auditing

CATFISH

SMART CONTRACT AUDIT



March 3, 2022

INTRODUCTION

Client	CatFish
Language	Solidity
Contract address	0x1Cf5Dbe1406F7adc85fb138b41cc087a834630AF
Decimals	9
Supply	1,000,000,000
Platform	Binance Smart Chain
Compiler	v0.8.4+commit.c7e474f2
Optimization	Yes, with 200 runs
Website	https://www.catfishtoken.net/
Telegram	https://t.me/catfishofficial
Twitter	https://twitter.com/catfishtoken

Description

CatFish is a community focused DeFi token. Next to earning passive \$FISH by holding \$FISH, holders get access to tools, alpha and more, just by holding \$FISH.

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Approach



Audit Details

Our comprehensive audit report provides a full overview of the audited system's architecture, smart contract codebase, and details on any vulnerabilities found within the system.



Audit Goals

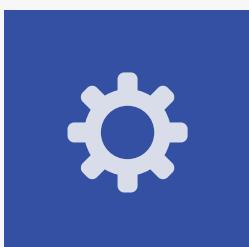
The audit goal is to ensure that the project is built to protect investors and users, preventing potentially catastrophic vulnerabilities after launch, that lead to scams and rugpulls.



Code Quality

Our analysis includes both automatic tests and manual code analysis for the following aspects:

- Exploits
 - Back-doors
 - Vulnerability
 - Accuracy
 - Readability
-



Tools

- Remix IDE
- MythX, Mytrhl
- SWC Registry
- Open Zeppelin Code Analyzer
- Solidity Code Complier

RISK CLASSIFICATION

CRITICAL

Issues on this level are critical to the smart contract's performance/functionality and should be fixed before moving to a live environment.

MEDIUM

Issues on this level could potentially bring problems and should eventually be fixed.

MINOR

Issues on this level are minor details and warning that can remain unfixed but would be better fixed at some point in the future

INFORMATIONAL

Information level is to offer suggestions for improvement of efficacy or security for features with a risk free factor.

ABSTRACT

Fees	Ownership	Mint function
Buy Fees: 7% Sell Fees: 7%	Owned	No mint function found
Owner can set fees	Max Tx amount	Pause
Owner can set fees up to 25%	Owner can't set max tx amount	Owner can't pause trading

Vulnerabilities Test

SWC ID	Description	
SWC-100	Function Default Visibility	Passed
SWC-101	Integer Overflow and Underflow	Passed
SWC-102	Outdated Compiler Version	Passed
SWC-103	FloatingPragma	Passed
SWC-104	Unchecked Call Return Value	Passed
SWC-105	Unprotected Ether Withdrawal	Passed
SWC-106	Unprotected SELF-DESTRUCT Instruction	Passed
SWC-107	Re-entrancy	Passed
SWC-108	State Variable Default Visibility	Minor
SWC-109	Uninitialized Storage Pointer	Passed
SWC-110	Assert Violation	Passed
SWC-111	Use of Deprecated Solidity Functions	Passed
SWC-112	Delegate Call to Untrusted Callee	Passed
SWC-113	DoS with Failed Call	Passed
SWC-114	Transaction Order Dependence	Passed
SWC-115	Authorization through tx.origin	Passed

SWC-116	Block values as a proxy for time	Passed
SWC-117	Signature Malleability	Passed
SWC-118	Incorrect Constructor Name	Passed
SWC-119	Shadowing State Variables	Passed
SWC-120	Weak Sources of Randomness from Chain Attributes	Passed
SWC-121	Missing Protection against Signature Replay Attacks	Passed
SWC-122	Lack of Proper Signature Verification	Passed
SWC-123	Requirement Violation	Passed
SWC-124	Write to Arbitrary Storage Location	Passed
SWC-125	Incorrect Inheritance Order	Passed
SWC-126	Insufficient Gas Griefing	Passed
SWC-127	Arbitrary Jump with Function Type Variable	Passed
SWC-128	DoS With Block Gas Limit	Passed
SWC-129	Typographical Error	Passed
SWC-130	Right-To-Left-Override control character (U+202E)	Passed
SWC-131	Presence of unused variables	Passed
SWC-132	Unexpected Ether balance	Passed
SWC-133	Hash Collisions With Multiple Variable Length Arguments	Passed
SWC-134	Message call with the hardcoded gas amount	Passed
SWC-135	Code With No Effects (Irrelevant/Dead Code)	Passed
SWC-136	Unencrypted Private Data On-Chain	Passed

MANUAL ANALYSIS

The contract is verified to check if functions do and work as they should and malicious code is not inserted.

	Tested	Result
Transfer	Yes	Passed
Total Supply	Yes	Passed
Buy Back	Yes	N/A
Burn	Yes	N/A
Mint	Yes	N/A
Rebase	Yes	N/A
Pause	Yes	N/A
Blacklist	Yes	N/A
Lock	Yes	N/A
Max Transaction	Yes	N/A
Transfer Ownership	Yes	Passed
Renounce Ownership	Yes	Passed

MANUAL AUDIT

CONTRACT INSPECTION



IERC20 Interface
L totalSupply External ! NO!
L balanceOf External ! NO!
L transfer External ! NO!
L allowance External ! NO!
L approve External ! NO!
L transferFrom External ! NO!
Context Implementation
L _msgSender Internal 🔒
L _msgData Internal 🔒
Ownable Implementation Context
L <Constructor> Public ! NO!
L owner Public ! NO!
L renounceOwnership Public ! NO! onlyOwner
L transferOwnership Public ! NO! onlyOwner
L _setOwner Private 🔒 NO!
SafeMath Library
L tryAdd Internal 🔒
L trySub Internal 🔒
L tryMul Internal 🔒
L tryDiv Internal 🔒
L tryMod Internal 🔒
L add Internal 🔒
L sub Internal 🔒
L mul Internal 🔒
L div Internal 🔒
L mod Internal 🔒
L sub Internal 🔒
L div Internal 🔒
L mod Internal 🔒

Address	Library						
L	isContract	Internal	🔒				
L	sendValue	Internal	🔒	○			
L	functionCall	Internal	🔒	○			
L	functionCall	Internal	🔒	○			
L	functionCallWithValue	Internal	🔒	○			
L	functionCallWithValue	Internal	🔒	○			
L	functionStaticCall	Internal	🔒				
L	functionStaticCall	Internal	🔒				
L	functionDelegateCall	Internal	🔒	○			
L	functionDelegateCall	Internal	🔒	○			
L	verifyCallResult	Internal	🔒				

IUniswapV2Router01	Interface					
L	factory	External	!		NO!	
L	WETH	External	!		NO!	
L	addLiquidity	External	!	○		NO!
L	addLiquidityETH	External	!	📈		NO!
L	removeLiquidity	External	!	○		NO!
L	removeLiquidityETH	External	!	○		NO!
L	removeLiquidityWithPermit	External	!	○		NO!
L	removeLiquidityETHWithPermit	External	!	○		NO!
L	swapExactTokensForTokens	External	!	○		NO!
L	swapTokensForExactTokens	External	!	○		NO!
L	swapExactETHForTokens	External	!	📈		NO!
L	swapTokensForExactETH	External	!	○		NO!
L	swapExactTokensForETH	External	!	○		NO!
L	swapETHForExactTokens	External	!	📈		NO!
L	quote	External	!		NO!	
L	getAmountOut	External	!		NO!	
L	getAmountIn	External	!		NO!	
L	getAmountsOut	External	!		NO!	
L	getAmountsIn	External	!		NO!	

IUniswapV2Router02 Interface IUniswapV2Router01
L removeLiquidityETHSupportingFeeOnTransferTokens External  NO
L removeLiquidityETHWithPermitSupportingFeeOnTransferTokens External  NO
L swapExactTokensForTokensSupportingFeeOnTransferTokens External  NO
L swapExactETHForTokensSupportingFeeOnTransferTokens External  NO
L swapExactTokensForETHSupportingFeeOnTransferTokens External  NO
IUniswapV2Factory Interface
L feeTo External NO
L feeToSetter External NO
L getPair External NO
L allPairs External NO
L allPairsLength External NO
L createPair External  NO
L setFeeTo External  NO
L setFeeToSetter External  NO
BaseToken Implementation
LiquidityGeneratorToken Implementation IERC20, Ownable, BaseToken
L <Constructor> Public  NO
L name Public NO
L symbol Public NO
L decimals Public NO
L totalSupply Public NO
L balanceOf Public NO
L transfer Public  NO
L allowance Public NO
L approve Public  NO
L transferFrom Public  NO
L increaseAllowance Public  NO
L decreaseAllowance Public  NO
L isExcludedFromReward Public NO
L totalFees Public NO

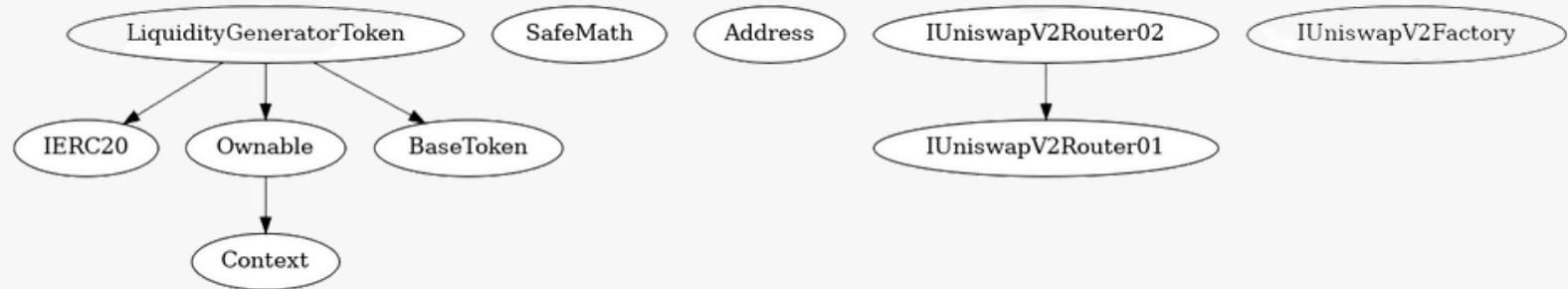
```

| L | deliver | Public | | NO | | |
| L | reflectionFromToken | Public | | NO | |
| L | tokenFromReflection | Public | | NO | |
| L | excludeFromReward | Public | | NO | | onlyOwner |
| L | includeInReward | External | | NO | | onlyOwner |
| L | _transferBothExcluded | Private | | NO | |
| L | excludeFromFee | Public | | NO | | onlyOwner |
| L | includeInFee | Public | | NO | | onlyOwner |
| L | setTaxFeePercent | External | | NO | | onlyOwner |
| L | setLiquidityFeePercent | External | | NO | | onlyOwner |
| L | setSwapAndLiquifyEnabled | Public | | NO | | onlyOwner |
| L | <Receive Ether> | External | | NO | | NO |
| L | _reflectFee | Private | | NO | |
| L | _getValues | Private | | NO | |
| L | _getTValues | Private | | NO | |
| L | _getRValues | Private | | NO | |
| L | _getRate | Private | | NO | |
| L | _getCurrentSupply | Private | | NO | |
| L | _takeLiquidity | Private | | NO | |
| L | _takeCharityFee | Private | | NO | |
| L | calculateTaxFee | Private | | NO | |
| L | calculateLiquidityFee | Private | | NO | |
| L | calculateCharityFee | Private | | NO | |
| L | removeAllFee | Private | | NO | |
| L | restoreAllFee | Private | | NO | |
| L | isExcludedFromFee | Public | | NO | |
| L | _approve | Private | | NO | |
| L | _transfer | Private | | NO | |
| L | swapAndLiquify | Private | | NO | | lockTheSwap |
| L | swapTokensForEth | Private | | NO | |
| L | addLiquidity | Private | | NO | |
| L | _tokenTransfer | Private | | NO | |
| L | _transferStandard | Private | | NO | |
| L | _transferToExcluded | Private | | NO | |
| L | _transferFromExcluded | Private | | NO | |

```

Symbol	Meaning
	Function can modify state
	Function is payable
	Private function
	Internal function
	Function has no modifier

INHERITANCE TREE



Inheritance is a feature of the object-oriented programming language. It is a way of extending the functionality of a program, used to separate the code, reduces the dependency, and increases the re-usability of the existing code. Solidity supports inheritance between smart contracts, where multiple contracts can be inherited into a single contract.

Important Snippets



Owner can exclude from fees

```
function excludeFromFee(address account) public onlyOwner {  
    _isExcludedFromFee[account] = true;  
}
```

Owner can exclude from rewards

```
function excludeFromReward(address account) public onlyOwner {  
    // require(account != 0x7a250d5630B4cF539739dF2C5dAcb4c659F2488D,  
    require(!_isExcluded[account], "Account is already excluded");  
    if (_rOwned[account] > 0) {  
        _tOwned[account] = tokenFromReflection(_rOwned[account]);  
    }  
    _isExcluded[account] = true;  
    _excluded.push(account);  
}
```

Owner cannot set fees more than 25%

```
function setTaxFeePercent(uint256 taxFeeBps) external onlyOwner {  
    _taxFee = taxFeeBps;  
    require(  
        _taxFee + _liquidityFee + _charityFee <= 10**4 / 4,  
        "Total fee is over 25%"  
    );  
}
```

GOOD PRACTICES ✓

- The owner cannot stop or pause the smart contract
- The owner cannot mint tokens after initial deployment
- The owner cannot set the fees more than 25%
- The owner cannot set max Tx
- The smart contract utilizes "SafeMath" to prevent overflows

```
library SafeMath {
    function tryAdd(uint256 a, uint256 b) internal pure returns (bool, uint256) {
        unchecked {
            uint256 c = a + b;
            if (c < a) return (false, 0);
            return (true, c);
        }
    }

    function trySub(uint256 a, uint256 b) internal pure returns (bool, uint256) {
        unchecked {
            if (b > a) return (false, 0);
            return (true, a - b);
        }
    }

    function tryMul(uint256 a, uint256 b) internal pure returns (bool, uint256) {
        unchecked {
            // Gas optimization: this is cheaper than requiring 'a' not being zero, but
            // benefit is lost if 'b' is also tested.
            // See: https://github.com/OpenZeppelin/openzeppelin-contracts/pull/522
            if (a == 0) return (true, 0);
            uint256 c = a * b;
            if (c / a != b) return (false, 0);
            return (true, c);
        }
    }

    function tryDiv(uint256 a, uint256 b) internal pure returns (bool, uint256) {
        unchecked {
            if (b == 0) return (false, 0);
            return (true, a / b);
        }
    }

    function tryMod(uint256 a, uint256 b) internal pure returns (bool, uint256) {
        unchecked {
            if (b == 0) return (false, 0);
            return (true, a % b);
        }
    }
}
```

WEBSITE



Website	https://www.catfishtoken.net/
Domain Registry	http://www.wix.com
Domain Expiry Date	2023-02-28
Response Code	200
SSL Checker and HTTPS Test	Passed
Deprecated HTML tags	Passed
Robots.txt	Passed
Sitemap Test	Passed
SEO Friendly URL	Passed
Responsive Test	Passed
JS Error Test	Passed
Console Errors Test	Passed
Site Loading Speed Test	1.45 seconds - Passed
HTTP2 Test	Passed
Safe Browsing Test	Passed

DISCLAIMER

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The purpose of the audit is to analyse the on-chain smart contract source code, and to provide basic overview of the project.

While we have used all the information available to us for this straightforward investigation, you should not rely on this report only – we recommend proceeding with several independent audits. Be aware that smart contracts deployed on a blockchain aren't secured enough against external vulnerability, or a hack. Be aware that active smart contract owner privileges constitute an elevated impact to smart contract's safety and security. Therefore, SafuAudit does not guarantee the explicit security of the audited smart contract. The analysis of the security is purely based on the smart contracts alone. No applications or operations were reviewed for security. No product code has been reviewed.

AUDIT RESULTS

CRITICAL

No critical severity issues have been found.

MEDIUM

No medium severity issues have been found.

MINOR

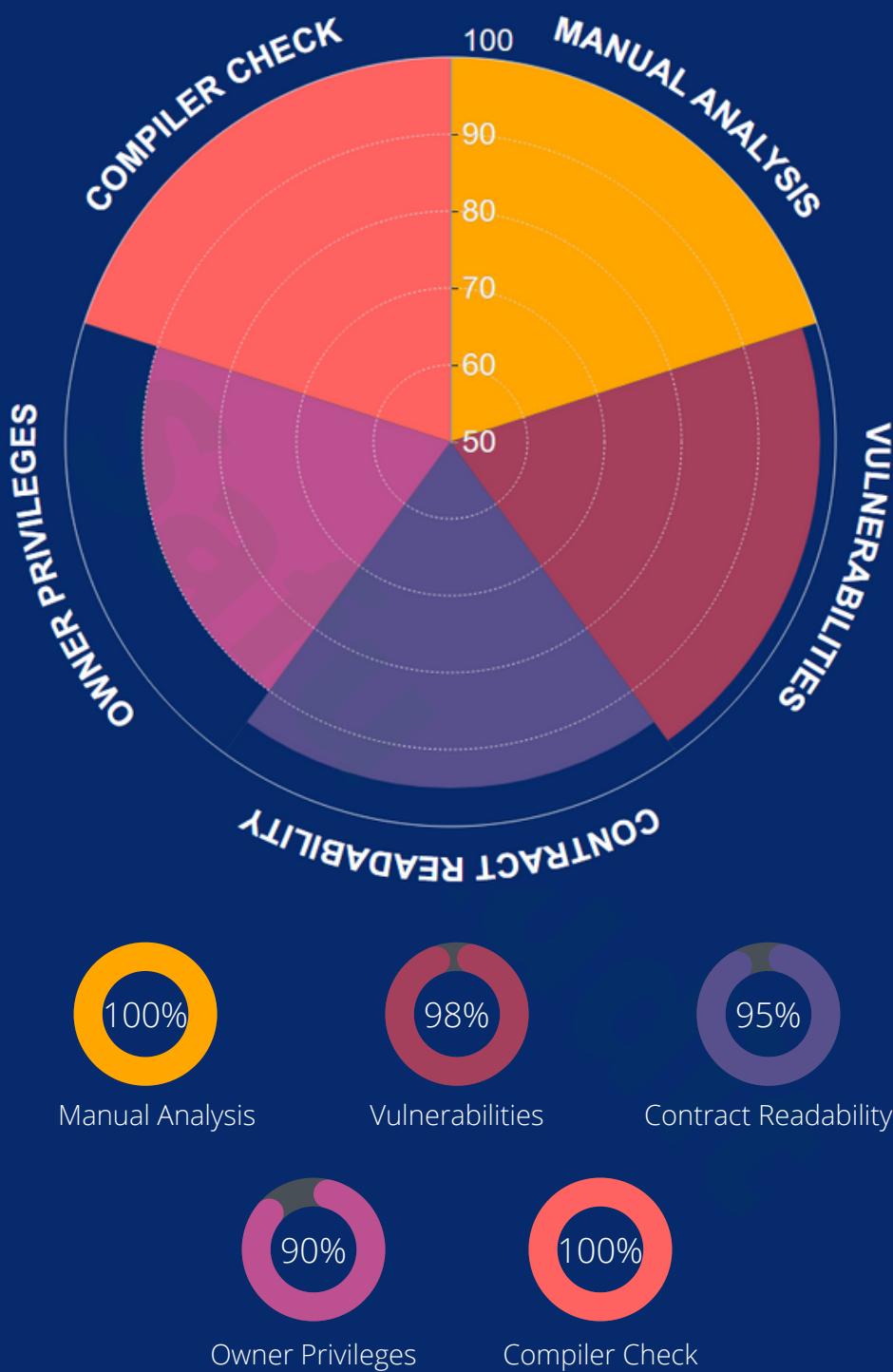
bool inSwapAndLiquify; line 957 - State variable visibility is not set.

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

INFORMATIONAL

The standard audit model does not offer suggestions and consulting for improvements of efficacy.

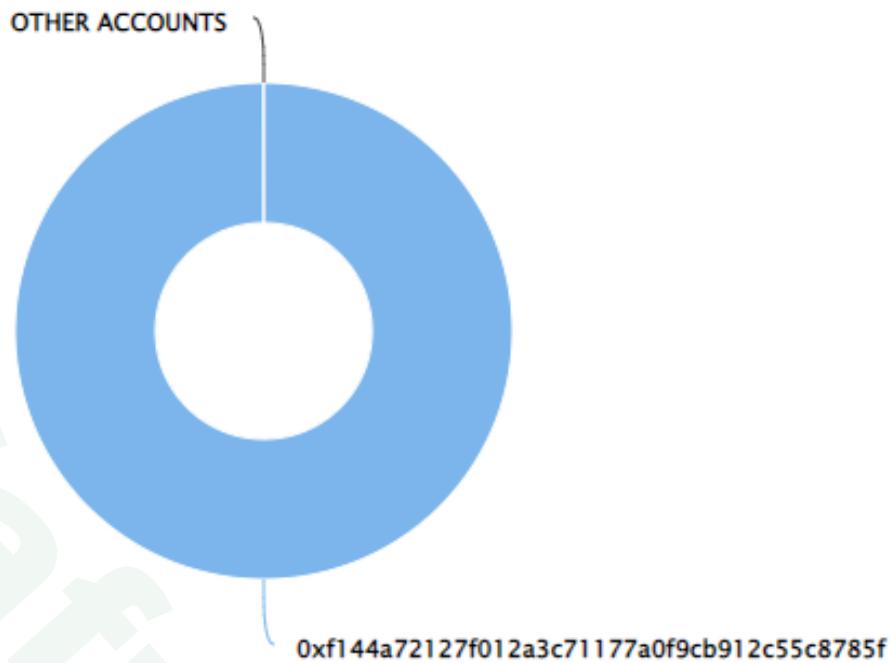
SAFUSCORE



Final Score: 9.66

SUMMARY

Top 10 holders



Rank	Address	Quantity (Token)	Percentage
1	0xf144a72127f012a3c71177a0f9cb912c55c8785f	1,000,000,000	100.00000%

Conclusion

Project CatFish does not contain any severe issues or risk characteristics.
SafuAudit has tested the security based on manual and automated tests.
Please note that we don't offer any warranties for business model.





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