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Building the Futuristic Blockchain Ecosystem

SECURITY AUDIT REPORT

FROGO

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OVERVIEW

The Expelee team has performed a line-by-line manual analysis and automated review of the smart contract. The smart contract was analysed mainly for common smart contract vulnerabilities, exploits, and manipulation hacks. According to the smart contract audit:

Audit Result	**Passed**
KYC Verification	**-**
Audit Date	**17 May 2023**

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CONTRACT DETAILS

Token Name: Crazy Frogo

Symbol: FROGO

Network: Binance smart chain

Language: Solidity

Contract Address: ---

Total Supply: 420,101,101,101,101

Contract SHA-256 Checksum: -
965be1bc06988cec5155ebe718030c0c8f933457

Owner's Wallet: ---

Deployer's Wallet: ---

OWNER PRIVILEGES

- Contract owner can set marketing wallet address
- Contract owner can set buy, sell, and transfer taxes with a maximum of 12% for buy/sell and 5% for transfer
- Contract owner can set the swap threshold amount (minimum 0 and maximum 0.5% of total supply)
- Contract owner can toggle swapping on and off
- Contract owner can whitelist or unwhitelist wallets
- Whitelisted wallets are exempt from taxes
- Taxes are taken during transfers based on the type of transfer (buy, sell, or transfer)
- Swapping is triggered when the contract balance reaches the swap threshold and the recipient is the pair address
- Swapped tokens are converted to ETH and sent to the marketing wallet
- Contract owner can withdraw stuck ETH and ERC20 tokens from the contract
- The contract accepts incoming ETH payments

AUDIT METHODOLOGY

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

- DE
- Open Zeppelin
- Code Analyzer
- Solidity Code
- Compiler
- Hardhat

VULNERABILITY CHECKS

Design Logic	Passed
Compiler warnings	Passed
Private user data leaks	Passed
Timestamps dependence	Passed
Integer overflow and underflow	Passed
Race conditions & reentrancy. Cross-function race conditions	Passed
Possible delays in data delivery	Passed
Oracle calls	Passed
Front Running	Passed
DoS with Revert	Passed
DoS with block gas limit	Passed
Methods execution permissions	Passed
Economy model	Passed
Impact of the exchange rate on the logic	Passed
Malicious event log	Passed
Scoping and declarations	Passed
Uninitialized storage pointers	Passed
Arithmetic accuracy	Passed
Cross-function race conditions	Passed
Safe Zepplin module	Passed

RISK CLASSIFICATION

When performing smart contract audits, our specialists look for known vulnerabilities as well as logical and acces control issues within the code. The exploitation of these issues by malicious actors may cause serious financial damage to projects that failed to get an audit in time. We categorize these vulnerabilities by the following levels:

High Risk

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

Medium Risk

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

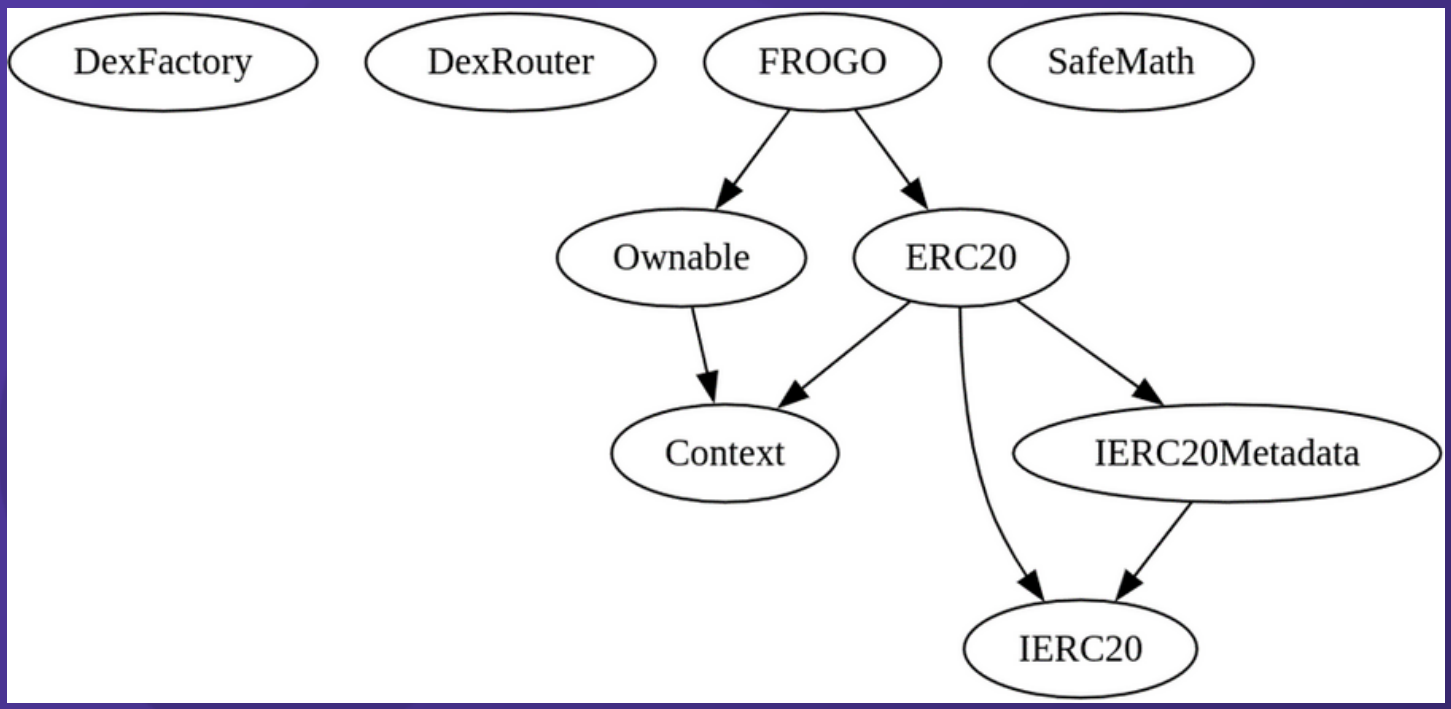
Low Risk

Issues on this level are minor details and warning that can remain unfixed.

Informational

Issues on this level are minor details and warning that can remain unfixed.

INHERITANCE TREES



TESTNET VERSION

Adding Liquidity ✔
Tx:
https://testnet.bscscan.com/tx/0xf65606d2fca74fdc4d2593d5e8ea6fdf7e63e189d6c2ad91ea46a2334faa9177

==========

Buying from a fee excluded wallet ✔
Tx (0% tax):
https://testnet.bscscan.com/tx/0xe6f68a7728b79188712e287153783102b6715fef09bd9202c1bc3e52c7ab5788

==========

Selling from a fee excluded wallet ✔
Tx (0% tax):
https://testnet.bscscan.com/tx/0x6f26210f02b2f09d81881a794af9a2b95ad1553763ead621516c2a394101384c

==========

Transferring using a fee excluded wallet ✔
Tx (0% tax):
https://testnet.bscscan.com/tx/0xf6498445b26f8862e9ea0e1c76197703f127882b3a1f73355fdf7522055f38f2

==========

TESTNET VERSION

Buying from a regular wallet ✔
Tx (0-12% tax):
https://testnet.bscscan.com/tx/0xf5881253aeb325c732379794319ddd99a0ccf5aa9658aa0dc30fba41bbf03216

==========

Selling from a regular wallet ✔
Tx (0-12% tax):
https://testnet.bscscan.com/tx/0x0a05d23135cd68628561443c9456f81a597c8fc4a8844cf1191187f215f73014

==========

Transferring a regular wallet ✔
Tx (0-12%):
https://testnet.bscscan.com/tx/0x990e2132b3f1da7745d6cb7417e9da64750c422eb4f62731de4cb5e688ab4aae

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FUNCTION DETAILS

Contract	Type	Bases		
└	**Function Name**	**Visibility**	**Mutability**	**Modifiers**
DexFactory	Interface			
└	createPair	External ❗	🛑	NO ❗
DexRouter	Interface			
└	factory	External ❗		NO ❗
└	WETH	External ❗		NO ❗
└	addLiquidityETH	External ❗	💵	NO ❗
└	swapExactTokensForETHSupportingFeeOnTransferTokens	External ❗	🛑	NO ❗
FROGO	Implementation	ERC20, Ownable		
└	<Constructor>	Public ❗	🛑	ERC20
└	setmarketingWallet	External ❗	🛑	onlyOwner
└	setBuyTaxes	External ❗	🛑	onlyOwner
└	setSellTaxes	External ❗	🛑	onlyOwner
└	setTransferFees	External ❗	🛑	onlyOwner
└	setSwapTokensAtAmount	External ❗	🛑	onlyOwner
└	toggleSwapping	External ❗	🛑	onlyOwner
└	setWhitelistStatus	External ❗	🛑	onlyOwner
└	checkWhitelist	External ❗		NO ❗
└	_takeTax	Internal 🔒	🛑	
└	_transfer	Internal 🔒	🛑	
└	internalSwap	Internal 🔒	🛑	
└	swapToETH	Internal 🔒	🛑	

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FUNCTION DETAILS

└	withdrawStuckETH	External ❗	🔴	onlyOwner
└	withdrawStuckTokens	External ❗	🔴	onlyOwner
└	<Receive Ether>	External ❗	💵	NO ❗
ERC20	Implementation	Context, IERC20, IERC20Metadata		
└	<Constructor>	Public ❗	🔴	NO ❗
└	name	Public ❗		NO ❗
└	symbol	Public ❗		NO ❗
└	decimals	Public ❗		NO ❗
└	totalSupply	Public ❗		NO ❗
└	balanceOf	Public ❗		NO ❗
└	transfer	Public ❗	🔴	NO ❗
└	allowance	Public ❗		NO ❗
└	approve	Public ❗	🔴	NO ❗
└	transferFrom	Public ❗	🔴	NO ❗
└	increaseAllowance	Public ❗	🔴	NO ❗
└	decreaseAllowance	Public ❗	🔴	NO ❗
└	_transfer	Internal 🔒	🔴	
└	_mint	Internal 🔒	🔴	
└	_burn	Internal 🔒	🔴	
└	_approve	Internal 🔒	🔴	
└	_spendAllowance	Internal 🔒	🔴	
└	_beforeTokenTransfer	Internal 🔒	🔴	
└	_afterTokenTransfer	Internal 🔒	🔴	
IERC20	Interface			
└	totalSupply	External ❗		NO ❗
└	balanceOf	External ❗		NO ❗
└	transfer	External ❗	🔴	NO ❗
└	allowance	External ❗		NO ❗
└	approve	External ❗	🔴	NO ❗
└	transferFrom	External ❗	🔴	NO ❗
IERC20Metadata	Interface	IERC20		
└	name	External ❗		NO ❗
└	symbol	External ❗		NO ❗
└	decimals	External ❗		NO ❗
Context	Implementation			
└	_msgSender	Internal 🔒		
└	_msgData	Internal 🔒		
Ownable	Implementation	Context		
└	<Constructor>	Public ❗	🔴	NO ❗
└	owner	Public ❗		NO ❗
└	_checkOwner	Internal 🔒		

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FUNCTION DETAILS

└	renounceOwnership	Public ❗	🛑	onlyOwner
└	transferOwnership	Public ❗	🛑	onlyOwner
└	_transferOwnership	Internal 🔒	🛑	
SafeMath	Library			
└	tryAdd	Internal 🔒		
└	trySub	Internal 🔒		
└	tryMul	Internal 🔒		
└	tryDiv	Internal 🔒		
└	tryMod	Internal 🔒		
└	add	Internal 🔒		
└	sub	Internal 🔒		
└	mul	Internal 🔒		
└	div	Internal 🔒		
└	mod	Internal 🔒		
└	sub	Internal 🔒		
└	div	Internal 🔒		
└	mod	Internal 🔒		

Legend

Symbol	Meaning
🛑	Function can modify state
💵	Function is payable

MANUAL REVIEW

Severity Criteria

Expelee assesses the severity of disclosed vulnerabilities according to methodology based on OWASP standarts.

Vulnerabilities are dividend into three primary risk categroies:
High
Medium
Low

High-level considerations for vulnerabilities span the following key areas when conducting assessments:

- Malicious input handling
- Escalation of privileges
- Arithmetic
- Gas use

Overall Risk Severity				
Impact	HIGH	Medium	High	Critical
	MEDIUM	Low	Medium	High
	LOW	Note	Low	Medium
		LOW	MEDIUM	HIGH
	Likelihood			

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FINDINGS

Findings	Severity	Found
High Risk	High	0
Medium Risk	Medium	0
Low Risk	Low	2
Suggestion & discussion	Informational	3
Gas Optimizations	Gas Opt.	0

LOW RISK FINDING

Category: Centralization
Subject: Centralized control over stuck tokens and ETH withdrawal
Severity: Low

Overview:
The contract allows the owner to withdraw stuck tokens and ETH from the contract. This centralizes control over the recovery of stuck assets.

Code:
- withdrawStuckETH()
- withdrawStuckTokens(address erc20_token)

Suggestion:
Consider implementing a time-locked multisig wallet to handle the recovery of stuck assets. This would reduce the centralization risk and provide additional security.

LOW RISK FINDING

Category: Centralization
Subject: Centralized control over fees and whitelisting
Severity: Low
Overview:
The contract allows the owner to set buy, sell, and transfer fees, as well as whitelist addresses. This centralizes control over the token's fee structure and exemptions.

Code:
- setBuyTaxes(uint256 _marketingTax) => 0-12%
- setSellTaxes(uint256 _marketingTax) => 0-12%
- setTransferFees(uint256 _marketingTax) => 0-5%
- setWhitelistStatus(address _wallet, bool _status)

SUGGESTIONS

Category: Informational
Subject: Centralized control over swapping and swap threshold

Overview:
The contract allows the owner to toggle swapping and set the swap threshold. This centralizes control over the token's swapping mechanism which can affect trade slippage and token price.

Code:
- setSwapTokensAtAmount(uint256 _newAmount)
- toggleSwapping()

SUGGESTIONS

Category: Informational
Subject: Centralized control over marketing wallet

Overview:
The contract allows the owner to set the marketing wallet address. This centralizes control over the token's marketing funds.

Code:
- setmarketingWallet(address _newmarketing)

SUGGESTIONS

Although the fees are adjustable in a safe range but it would be a good practice to consider implementing a decentralized governance mechanism to allow token holders to vote on fee structures and whitelisting. This would reduce the centralization risk and give more control to the community.

ABOUT EXPELEE

Expelee is a product-based aspirational Web3 start-up. Coping up with numerous solutions for blockchain security and constructing a Web3 ecosystem from deal making platform to developer hosting open platform, while also developing our own commercial and sustainable blockchain.

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