

SMART CONTRACT SECURITY AUDIT for



Token Overview

0xSafe received the application for a smart contract security audit of **EtherCake** on April 4th, 2022.

Details

Client: EtherCake [\$ECAKE]

Blockchain: Binance Smart Chain

Contract: 0x0C07358EC722A32E929aa6aF0B7FEb3D2Da3c863

Compiler: v0.8.4+commit.c7e474f2

Optimization: Yes with 200 runs

Website: https://ethercake.app

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Methodology

Audit Details

This comprehensive audit report provides an overview of the **EtherCake** token smart contract. 0xSafe utilizes a combination of static, automated, and manual analysis tools to check for any potential vulnerabilities or hacks in the system.

Code Quality

This includes a full review of the smart contract code. The prime areas of focus are:

- Accuracy
- Exploits
- Functionality
- Readability
- Security
- Vulnerabilities

Scope of work

EtherCake's team provided us with the files that need to be tested (BSCscan, Etherscan, Github, etc.). The focus of the security audit is the main token smart contract.

Tools

Ganache, Mithril, MythX, Open Zeppelin Code Analyzer, Proprietary tests, Remix IDE, Solidity Compiler, SWC Registry.

Risk Classification

!Critical	This signifies vulnerabilities with the smart contract's functionality or performance. Issues should be resolved immediately.
!Medium	This signifies vulnerabilities that can potentially cause problems and should eventually be fixed.
!Minor	Minor vulnerabilities may or may not impact smart contract functionality.
!Informational	This is there to offer suggestions for improvement

Audit Findings

Critical Issues

-no critical issues found-

Medium Issues

-no medium issues found-

Minor Issues

Issue	Туре	Line #(s)	Description
#1	A floating pragma is set.	7	Current pragma directive is: "^v0.8.4"
#3	Use of "tx.origin" as a part of authorization	681, 686, 691, 2162, 2176, 2416, 2433, 2450, 2467,	Using "tx.origin" as a security control can lead to authorization bypass vulnerabilities.
#4	Potential use of "block.number" as source of randonmness	1686, 2192, 2253, 2264, 2271	Note that the values of variables like coinbase, gaslimit, block number and timestamp are predictable and can be manipulated by a malicious miner.

SWC Attacks

SWC ID	Description	Status
SWC-100	Function Default Visibility	PASSED
SWC-101	Integer Overflow and Underflow	PASSED
SWC-102	Outdated Compiler Version	PASSED
SWC-103	Floating Pragma	MINOR
SWC-104	Unchecked Call Return Value	PASSED
SWC-105	Unprotected Ether Withdrawal	PASSED
SWC-106	Unprotected SELFDESTRUCT Instruction	PASSED
SWC-107	Reentrancy	PASSED
SWC-108	State Variable Default Visibility	PASSED
SWC-109	Uninitialized Storage Pointer	PASSED
SWC-110	Assert Violation	PASSED
SWC-111	Use of Deprecated Solidity Functions	PASSED
SWC-112	Delegatecall to Untrusted Callee	PASSED
SWC-113	DoS with Failed Call	PASSED
SWC-114	Transaction Order Dependence	PASSED
SWC-115	Authorization through tx.origin	MINOR
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	MINOR
SWC-121	Missing Protection against Signature Replay Attacks	PASSED

SWC-122	Lack of Proper Signature Verification	PASSED	
SWC-123	Requirement Violation	PASSED	
SWC-124	SWC-124 Write to Arbitrary Storage Location		
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	SWC-134 Message call with hardcoded gas amount		
SWC-135	Code With No Effects	PASSED	
SWC-136	Unencrypted Private Data On-Chain	PASSED	

Important Notes

Owner can exclude from fees

```
function excludeFromFees(address account, bool excluded) public onlyOwner {
    require(isExcludedFromFees[account] != excluded, "Already excluded");
    isExcludedFromFees[account] = excluded;
    emit ExcludeFromFees(account, excluded);
}
Owner can exclude from rewards
function excludeFromDividend(address account) public onlyOwner {
    t1DividendTracker.excludeFromDividends(address(account));
    t2DividendTracker.excludeFromDividends(address(account));
}
Owner can blacklist addresses
function addToBlacklist(address account, bool excluded) external onlyOwner {
    _isSoB[account] = excluded;
    emit BUser(account, excluded);
}
Owner can set the max wallet balance to 0%
function setMaxWalletToken(uint256 _maxToken) external onlyOwner() {
    maxWalletToken = _maxToken * (10**18);
}
Owner can set the max transaction to 0%
function setMaxBuyTransaction(uint256 maxTxn) external onlyOwner {
    maxBuyTransactionAmount = maxTxn * (10**18);
}
function setMaxSellTransaction(uint256 maxTxn) external onlyOwner {
    maxSellTransactionAmount = maxTxn * (10**18);
}
Owner can pause trading
function setTradingIsEnabled(bool _enabled) public onlyOwner {
    tradingIsEnabled = enabled;
}
```

Good Practices

- Owner cannot mint new tokens after initial deployment
- Owner cannot set fees more than 25%
- The smart contract utilizes "SafeMath" to prevent overflows

Inheritance Tree



Contract Inspection

Below is a visual description report comprising of information about the system's files, contracts, and their functions.

Legend

```
Symbol | Meaning |
|:-----|
| Function can modify state |
| Image: Image
```

Table

```
| Contract |
                         Bases | |
            Type |
| L | **Function Name** | **Visibility** | **Mutability** | **Modifiers** |
ШШ
| **Context** | Implementation | ||| | |
| L | msgSender | Internal 🔒 | | |
| L | msgData | Internal 🔒 | | |
| **Ownable** | Implementation | Context |||
| L | owner | Public | | NO | |
| L | renounceOwnership | Public | | | | onlyOwner |
| L | transferOwnership | Public | | | left | onlyOwner |
| **IERC20** | Interface | |||
| L | totalSupply | External | | NO | |
| L | balanceOf | External | | NO | |
```

```
| L | transfer | External | | | NO | |
| L | allowance | External | | NO | |
| L | transferFrom | External | | | NO | |
| **ERC20** | Implementation | Context, IERC20 |||
| 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 | transferFrom | Public | | | NO | |
| L | increaseAllowance | Public | | | NO | |
| L | _transfer | Internal 🔒 | 🛑 | |
| L | mint | Internal 🔒 | 🛑 | |
| L | burn | Internal 🔒 | 🛑 | |
| L | approve | Internal 🔒 | 🛑 | |
| L | setupDecimals | Internal 🔒 | 🛑 | |
| L | _beforeTokenTransfer | Internal 🔒 | 🛑 | |
||||||
| **IDividendPayingToken** | Interface | |||
| L | dividendOf | External | | | NO | |
| **IDividendPayingTokenOptional** | Interface | |||
| L | withdrawableDividendOf | External | | NO | |
| L | withdrawnDividendOf | External | | NO | |
| L | accumulativeDividendOf | External | | NO | |
||||||
| **DividendPayingToken** | Implementation | ERC20, IDividendPayingToken,
| IDividendPayingTokenOptional
| L | <Receive Ether> | External | | III | NO | |
```

```
| L | setDividendTokenAddress | External | | | NO | | |
| L | setMinTokenBeforeSendDividend | External | | | NO | |
| L | withdrawDividendOfUser | Internal 🔒 | 🛑 | |
| L | dividendOf | Public | | NO | |
| L | withdrawableDividendOf | Public | | NO | |
| L | withdrawnDividendOf | Public | | NO | |
| L | accumulativeDividendOf | Public | | | NO | |
| L | transfer | Internal 🔒 | 🛑 | |
| L | mint | Internal 🔒 | 🛑 | |
| L | burn | Internal 🔒 | 🛑 | |
| L | setBalance | Internal 🔒 | 🛑 | |
| **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 | |
| **IUniswapV2Pair** | Interface | |||
| L | name | External | | NO | |
| L | symbol | External | | NO | |
| L | decimals | External | | NO | |
| L | totalSupply | External | | NO | |
| L | balanceOf | External | | NO | |
| L | allowance | External | | NO | |
| L | transfer | External | | | NO | |
| L | DOMAIN SEPARATOR | External | | | NO | |
| L | PERMIT TYPEHASH | External | | | | NO | |
| L | nonces | External | | NO | |
| L | MINIMUM LIQUIDITY | External | | | | NO | |
| L | factory | External | | NO | |
| L | token0 | External | | NO | |
```

```
| L | token1 | External | | NO | | | |
| L | getReserves | External | | NO | |
| L | price0CumulativeLast | External | | NO | |
| L | price1CumulativeLast | External | | NO | |
| L | kLast | External | | NO | |
| L | mint | External | | | NO | |
| L | burn | External | | | NO | |
| L | skim | External | | | NO | |
| L | sync | External | | | NO | |
| **IUniswapV2Router01** | Interface | |||
| L | factory | External | | NO | |
| L | WETH | External | | NO | |
| L | addLiquidity | External | | | | NO | |
| L | addLiquidityETH | External | | III | 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 | | 1 1 NO | |
| L | swapTokensForExactETH | External | | | NO | |
| L | swapExactTokensForETH | External | | | NO | |
| L | swapETHForExactTokens | External | | III | INO | |
| L | quote | External | | NO | |
| L | getAmountOut | External | | NO | |
| L | getAmountIn | External | | NO | |
| L | getAmountsOut | External | | NO | |
| L | getAmountsIn | External | | NO | |
||||||
| **IUniswapV2Router02** | Interface | IUniswapV2Router01 |||
| L | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External | |
INO I
| L | swapExactTokensForTokensSupportingFeeOnTransferTokens | External | | |
INO I
```

```
| L | swapExactETHForTokensSupportingFeeOnTransferTokens | External | | III
INO | I
| L | swapExactTokensForETHSupportingFeeOnTransferTokens | External | | |
INO | I
| **IterableMapping** | Library | ||| | |
| L | get | Public | | NO | |
| L | getIndexOfKey | Public | | NO | |
| L | getKeyAtIndex | Public | | NO | |
| L | size | Public | | NO | |
| L | set | Public | | | NO | |
| L | remove | Public | | | NO | |
||||||
| 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 🔒 | | |
| **SafeMathInt** | Library | |||
| L | mul | Internal 🔒 | | |
| L | div | Internal 🔒 | | |
| L | sub | Internal 🔒 | | |
| L | add | Internal 🔒 | | |
| L | toUint256Safe | Internal 🔒 | | |
| **SafeMathUint** | Library | |||
| L | toInt256Safe | Internal 🔒 | | |
| **EtherCake** | Implementation | ERC20, Ownable |||
```

```
| L | <Receive Ether> | External | | III | NO | |
| L | setMaxBuyTransaction | External | | | | onlyOwner |
| L | setMaxSellTransaction | External | | | | onlyOwner |
| L | updateT1DividendToken | External | | | | onlyOwner |
| L | updateT2DividendToken | External | | | | onlyOwner |
| L | updateMinT1BeforeSendDividend | External | | | | onlyOwner |
| L | updateMinT2BeforeSendDividend | External | | | | onlyOwner |
| L | getMinT1BeforeSendDividend | External | | NO | |
| L | getMinT2BeforeSendDividend | External | | NO | |
| L | setSendT1InTx | External | | | left | onlyOwner |
| L | setT1DividendPriority | External | | | | onlyOwner |
| L | updateStakingWallet | External | | | | onlyOwner |
| L | setMaxWalletToken | External | | | | onlyOwner |
| L | setSellTransactionMultiplier | External | | | | onlyOwner |
| L | setABSellMultiplier | External | | | | onlyOwner |
| L | setTradingIsEnabled | External | | | | onlyOwner |
| L | addMultipleAccountsToBlacklist | External | | | | onlyOwner |
| L | IsSoB | Public | | INO | |
| L | setABActive | External | | | onlyOwner |
| L | setGasPriceLimit | External | | | | onlyOwner |
| L | setBlocksToWait | External | | | | onlyOwner |
| L | withdrawForeignToken | Public | | | lonlyOwner |
| L | updateTotalFee | Internal 🔒 | 🛑 | |
| L | setT1DividendEnabled | External | | | | onlyOwner |
| L | setMarketingEnabled | External | | | | onlyOwner |
| L | updateT1DividendRewardFee | External | | | | onlyOwner |
| L | updateMarketingFee | External | | | | onlyOwner |
```

```
| L | updateLiquidityFee | External | | | | onlyOwner |
| L | excludeFromFees | Public | | | left | onlyOwner |
| L | excludeFromDividend | Public | | | | onlyOwner |
| L | setAutomatedMarketMakerPair | Private 🔐 | 🛑 | onlyOwner |
| L | updateGasForProcessing | External | | | | onlyOwner |
| L | updateMinimumBalanceForDividends | External | | | | onlyOwner |
| L | updateClaimWait | External | | | | onlyOwner |
| L | getT1ClaimWait | External | | NO | |
| L | getT2ClaimWait | External | | NO | |
| L | getTotalT1DividendsDistributed | External | | NO | |
| L | getTotalT2DividendsDistributed | External | | NO | |
| L | getIsExcludedFromFees | Public | | NO | |
| L | withdrawableT1DividendOf | External | | NO | |
| L | withdrawableT2DividendOf | External | | NO | |
| L | t1DividendTokenBalanceOf | External | | NO | |
| L | t2DividendTokenBalanceOf | External | | NO | |
| L | getAccountT1DividendsInfo | External | | NO | |
| L | getAccountT2DividendsInfo | External | | NO | |
| L | getAccountT1DividendsInfoAtIndex | External | | NO | |
| L | getAccountT2DividendsInfoAtIndex | External | | NO | |
| L | rand | Internal 🔒 | | |
| L | claim | External | | | NO | |
| L | getLastT1DividendProcessedIndex | External | | NO | |
| L | getLastT2DividendProcessedIndex | External | | NO | |
L | getNumberOfT1DividendTokenHolders | External | | NO | |
L getNumberOfT2DividendTokenHolders | External | NO | |
| L | transfer | Internal 🔒 | 🛑 | | |
| L | swapAndLiquify | Private 🔐 | 🛑 | |
| L | addLiquidity | Private 🔐 | 🛑 | |
| L | swapTokensForBNB | Private 🔐 | 🛑 | |
| L | swapTokensForDividendToken | Private 🔐 | 🛑 | |
| L | swapAndSendT1Dividends | Private 🔐 | 🛑 | |
| L | swapAndSendT2Dividends | Private 🔐 | 🛑 | |
| L | transferToWallet | Private 🔐 | 🛑 | |
| **T1DividendTracker** | Implementation | DividendPayingToken, Ownable |||
| L | <Constructor> | Public | | | DividendPayingToken |
```

```
| L | transfer | Internal 🔒 | | | | | |
| L | withdrawDividend | Public | | NO | |
| L | setDividendTokenAddress | External | | | | onlyOwner |
| L | updateMinimumTokenBalanceForDividends | External | | | | | onlyOwner |
| L | updateClaimWait | External | | | | onlyOwner |
| L | getLastProcessedIndex | External | | NO | |
| L | getNumberOfTokenHolders | External | | NO | |
| L | getAccount | Public | | NO | |
| L | getAccountAtIndex | Public | | NO | |
| L | canAutoClaim | Private 🔐 | | |
| L | process | Public | | | NO | |
||||||
| **T2DividendTracker** | Implementation | DividendPayingToken, Ownable |||
| L | <Constructor> | Public | | | DividendPayingToken |
| L | transfer | Internal 🔒 | | |
| L | withdrawDividend | Public | | NO | |
| L | setDividendTokenAddress | External | | | | onlyOwner |
| L | updateMinimumTokenBalanceForDividends | External | | | | | onlyOwner |
| L | updateClaimWait | External | | | | onlyOwner |
| L | getLastProcessedIndex | External | | NO | |
| L | getNumberOfTokenHolders | External | | NO | |
| L | getAccount | Public | | NO | |
| L | getAccountAtIndex | Public | | NO | |
| L | canAutoClaim | Private 🔐 | | |
| L | setBalance | External | | | | onlyOwner |
| L | processAccount | Public | | | left | onlyOwner |
```

Audit Results

EtherCake does not contain any severe issues or risks. The security of the smart contract was tested by 0xSafe using static, automated, and manual analysis. The

AUDIT PASSED

Note:

Please check the disclaimer below and note the audit makes no statements or warranties on the business model, investment attractiveness, or code sustainability of this project. The security audit report is provided for the only contract mentioned in this report.

Disclaimer

0xSafe.io provides contract auditing, KYC, development, and launch services for blockchain projects. The purpose of the security audit is to analyze the on-chain smart contract source code and to provide an easy-to-understand assessment of the crypto project and the smart contract. **0xSafe.io provides information as is.**

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