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AUDIT COMPANY

Smart Contract Security Audit

TechRate

November, 2021

Audit Details

Audited project

Baby CateCoin

Deployer address

0xdd33640dccd29f842f68b0850d4b20334bd113d8

Client contacts:

Baby CateCoin team

Blockchain

Binance Smart Chain

Project website:

https://babycatecoin.net

Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as at 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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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.

Background

TechRate was commissioned by Baby CateCoin to perform an audit of smart contracts:

https://bscscan.com/address/0x1529642cd0075d3da049aa43005fdfabca54a070#code

The purpose of the audit was to achieve the following:

- Ensure that the smart contract functions as intended.
- Identify potential security issues with the smart contract.

The information in this report should be used to understand the risk exposure of the smart contract, and as a guide to improve the security posture of the smart contract by remediating the issues that were identified.

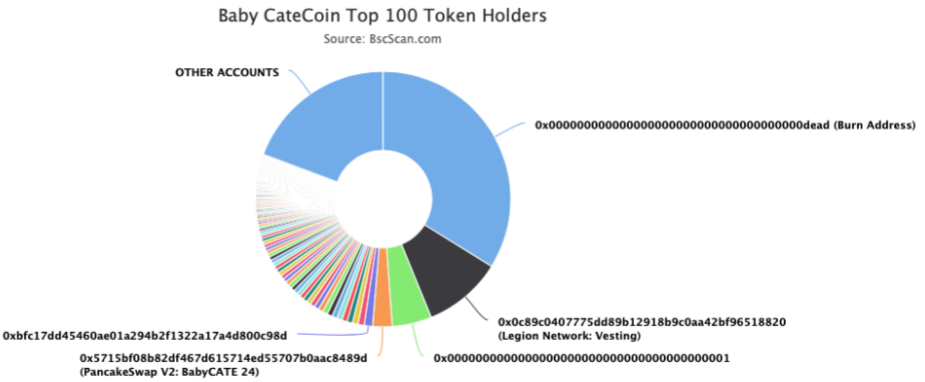
Contracts Details

Token contract details for 12.11.2021

Contract name	Baby CateCoin
Contract address	0x1529642Cd0075d3DA049aA43005fdfaBCa54a070
Total supply	1,000,000,000,000,000
Token ticker	BabyCATE
Decimals	9
Token holders	5,558
Transactions count	16,845
Top 100 holders dominance	80.71%
Liquidity fee	9
Tax fee	1
Total fees	30895440747498987804319
Uniswap V2 pair	0x5715bf08b82df467d615714ed55707b0aac8489d
Contract deployer address	0xdd33640dccd29f842f68b0850d4b20334bd113d8
Contract's current owner address	0xdd33640dccd29f842f68b0850d4b20334bd113d8

Baby CateCoin Token Distribution

The top 100 holders collectively own 80.71% (807,118,601,455,292.00 Tokens) of Baby CateCoin | Token Total Supply: 1,000,000,000,000,000.00 Token | Total Token Holders: 5,558

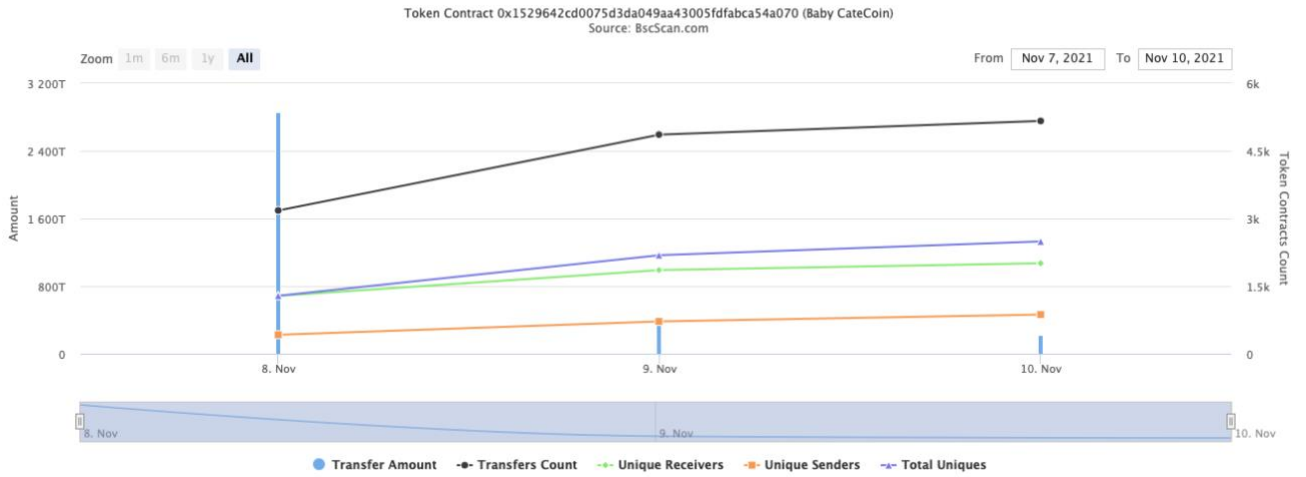


(A total of 807,118,601,455,292.00 tokens held by the top 100 accounts from the total supply of 1,000,000,000,000,000.00 token)

Baby CateCoin Contract Interaction Details

Time Series: Token Contract Overview

Mon 8, Nov 2021 - Wed 10, Nov 2021



Baby CateCoin Top 10 Token Holders

Rank	Address	Quantity (Token)	Percentage
1	Burn Address	338,373,343,758,490.139678583	33.8373%
2	Legion Network: Vesting	100,000,908,188,647.462215963	10.0001%
3	0x0000000000000000000000000000000000000001	50,000,000,000,000	5.0000%
4	PancakeSwap V2: BabyCATE 24	24,633,421,230,619.071872751	2.4633%
5	0xbfc17dd45460ae01a294b2f1322a17a4d800c98d	10,809,083,933,114.253879132	1.0809%
6	0x600c26383ba227faa50f3b07b6cecb604d05385b	7,636,239,864,102.623721479	0.7636%
7	0x2a10819e394f4cece6beef8407fb5d7c9e5599a6	7,272,880,904,603.609917724	0.7273%
8	0x5b6fd827d0377e6269ab8c2a1b91df6f46fb2f31	6,853,336,423,840.248919554	0.6853%
9	0x1f23133344ef1aeaeedc257c95e21d29aed5ef8a	6,704,500,096,031.927532307	0.6705%
10	0x7b630d9518f178f7298d3323b4218ff242bfedc5	6,629,516,650,340.682888359	0.6630%

Contract functions details

+ Context
  - [Int] _msgSender
  - [Int] _msgData

+ [Int] IERC20
  - [Ext] totalSupply
  - [Ext] balanceOf
  - [Ext] transfer #
  - [Ext] allowance
  - [Ext] approve #
  - [Ext] transferFrom #

+ [Lib] SafeMath
  - [Int] add
  - [Int] sub
  - [Int] sub
  - [Int] mul
  - [Int] div
  - [Int] div
  - [Int] mod
  - [Int] mod

+ [Lib] Address
  - [Int] isContract
  - [Int] sendValue #
  - [Int] functionCall #
  - [Int] functionCall #
  - [Int] functionCallWithValue #
  - [Int] functionCallWithValue #
  - [Prv] _functionCallWithValue #

+ Ownable (Context)
  - [Pub] <Constructor> #
  - [Pub] owner
  - [Pub] renounceOwnership #
    - modifiers: onlyOwner
  - [Pub] transferOwnership #
    - modifiers: onlyOwner
  - [Pub] getUnlockTime
  - [Pub] getTime
  - [Pub] lock #
    - modifiers: onlyOwner
  - [Pub] unlock #

+ [Int] IUniswapV2Factory
  - [Ext] feeTo
  - [Ext] feeToSetter
  - [Ext] getPair
  - [Ext] allPairs
  - [Ext] allPairsLength
  - [Ext] createPair #

  - [Ext] setFeeTo #
  - [Ext] setFeeToSetter #

+ [Int] IUniswapV2Pair
  - [Ext] name
  - [Ext] symbol
  - [Ext] decimals
  - [Ext] totalSupply
  - [Ext] balanceOf
  - [Ext] allowance
  - [Ext] approve #
  - [Ext] transfer #
  - [Ext] transferFrom #
  - [Ext] DOMAIN_SEPARATOR
  - [Ext] PERMIT_TYPEHASH
  - [Ext] nonces
  - [Ext] permit #
  - [Ext] MINIMUM_LIQUIDITY
  - [Ext] factory
  - [Ext] token0
  - [Ext] token1
  - [Ext] getReserves
  - [Ext] price0CumulativeLast
  - [Ext] price1CumulativeLast
  - [Ext] kLast
  - [Ext] burn #
  - [Ext] swap #
  - [Ext] skim #
  - [Ext] sync #
  - [Ext] initialize #

+ [Int] IUniswapV2Router01
  - [Ext] factory
  - [Ext] WETH
  - [Ext] addLiquidity #
  - [Ext] addLiquidityETH ($)
  - [Ext] removeLiquidity #
  - [Ext] removeLiquidityETH #
  - [Ext] removeLiquidityWithPermit #
  - [Ext] removeLiquidityETHWithPermit #
  - [Ext] swapExactTokensForTokens #
  - [Ext] swapTokensForExactTokens #
  - [Ext] swapExactETHForTokens ($)
  - [Ext] swapTokensForExactETH #
  - [Ext] swapExactTokensForETH #
  - [Ext] swapETHForExactTokens ($)
  - [Ext] quote
  - [Ext] getAmountOut
  - [Ext] getAmountIn
  - [Ext] getAmountsOut
  - [Ext] getAmountsIn

+ [Int] IUniswapV2Router02 (IUniswapV2Router01)
  - [Ext] removeLiquidityETHSupportingFeeOnTransferTokens #
  - [Ext] removeLiquidityETHWithPermitSupportingFeeOnTransferTokens #

- [Ext] swapExactTokensForTokensSupportingFeeOnTransferTokens #
- [Ext] swapExactETHForTokensSupportingFeeOnTransferTokens ($)
- [Ext] swapExactTokensForETHSupportingFeeOnTransferTokens #

+ BabyCateCoin (Context, IERC20, Ownable)
- [Pub] <Constructor> #
- [Pub] name
- [Pub] symbol
- [Pub] decimals
- [Pub] totalSupply
- [Pub] balanceOf
- [Pub] transfer #
- [Pub] allowance
- [Pub] approve #
- [Ext] manualSend #
  - modifiers: onlyOwner
- [Pub] transferFrom #
- [Pub] increaseAllowance #
- [Pub] decreaseAllowance #
- [Pub] isExcludedFromReward
- [Pub] totalFees
- [Pub] minimumTokensBeforeSwapAmount
- [Pub] buyBackUpperLimitAmount
- [Pub] deliver #
- [Pub] reflectionFromToken
- [Pub] tokenFromReflection
- [Pub] excludeFromReward #
  - modifiers: onlyOwner
- [Ext] includeInReward #
  - modifiers: onlyOwner
- [Prv] _approve #
- [Prv] _transfer #
- [Ext] callMoonShot #
  - modifiers: onlyOwner
- [Prv] swapTokens #
  - modifiers: lockTheSwap
- [Prv] buyBackTokens #
  - modifiers: lockTheSwap
- [Prv] swapTokensForEth #
- [Prv] swapETHForTokens #
- [Prv] addLiquidity #
- [Prv] _tokenTransfer #
- [Prv] _transferStandard #
- [Prv] _transferToExcluded #
- [Prv] _transferFromExcluded #
- [Prv] _transferBothExcluded #
- [Prv] _reflectFee #
- [Prv] _getValues
- [Prv] _getTValues
- [Prv] _getRValues
- [Prv] _getRate
- [Prv] _getCurrentSupply
- [Prv] _takeLiquidity #
- [Prv] calculateTaxFee
- [Prv] calculateLiquidityFee

- [Prv] removeAllFee #
- [Prv] restoreAllFee #
- [Pub] isExcludedFromFee
- [Pub] excludeFromFee #
  - modifiers: onlyOwner
- [Pub] includeInFee #
  - modifiers: onlyOwner
- [Ext] setTaxFeePercent #
  - modifiers: onlyOwner
- [Ext] setLiquidityFeePercent #
  - modifiers: onlyOwner
- [Ext] setMaxTxAmount #
  - modifiers: onlyOwner
- [Ext] setMarketingDivisor #
  - modifiers: onlyOwner
- [Ext] setNumTokensSellToAddToLiquidity #
  - modifiers: onlyOwner
- [Ext] setBuybackUpperLimit #
  - modifiers: onlyOwner
- [Ext] setMarketingAddress #
  - modifiers: onlyOwner
- [Pub] setSwapAndLiquifyEnabled #
  - modifiers: onlyOwner
- [Pub] setBuyBackEnabled #
  - modifiers: onlyOwner
- [Ext] prepareForPreSale #
  - modifiers: onlyOwner
- [Ext] afterPreSale #
  - modifiers: onlyOwner
- [Prv] transferToAddressETH #
- [Ext] <Fallback> ($)

($) = payable function
= non-constant function

Issues Checking Status

	Issue description	Checking status
1.	Compiler errors.	Passed
2.	Race conditions and Reentrancy. Cross-function race conditions.	Passed
3.	Possible delays in data delivery.	Passed
4.	Oracle calls.	Passed
5.	Front running.	Passed
6.	Timestamp dependence.	Passed
7.	Integer Overflow and Underflow.	Passed
8.	DoS with Revert.	Passed
9.	DoS with block gas limit.	Low issues
10.	Methods execution permissions.	Passed
11.	Economy model of the contract.	Passed
12.	The impact of the exchange rate on the logic.	Passed
13.	Private user data leaks.	Passed
14.	Malicious Event log.	Passed
15.	Scoping and Declarations.	Passed
16.	Uninitialized storage pointers.	Passed
17.	Arithmetic accuracy.	Passed
18.	Design Logic.	Passed
19.	Cross-function race conditions.	Passed
20.	Safe Open Zeppelin contracts implementation and usage.	Passed
21.	Fallback function security.	Passed

Security Issues

High Severity Issues

No high severity issues found.

Medium Severity Issues

No medium severity issues found.

Low Severity Issues

1. Out of gas

Issue:

- The function includeInReward() uses the loop to find and remove addresses from the _excluded list. Function will be aborted with OUT_OF_GAS exception if there will be a long excluded addresses list.

```
function includeInReward(address account⬆) external onlyOwner() {
    require(_isExcluded[account⬆], "Account is already excluded");
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (_excluded[i] == account⬆) {
            _excluded[i] = _excluded[_excluded.length - 1];
            _tOwned[account⬆] = 0;
            _isExcluded[account⬆] = false;
            _excluded.pop();
            break;
        }
    }
}
```

- The function _getCurrentSupply also uses the loop for evaluating total supply. It also could be aborted with OUT_OF_GAS exception if there will be a long excluded addresses list.

```
function _getCurrentSupply() private view returns (uint256, uint256) {
    uint256 rSupply = _rTotal;
    uint256 tSupply = _tTotal;
    for (uint256 i = 0; i < _excluded.length; i++) {
        if (
            _rOwned[_excluded[i]] > rSupply ||
            _tOwned[_excluded[i]] > tSupply
        ) return (_rTotal, _tTotal);
        rSupply = rSupply.sub(_rOwned[_excluded[i]]);
        tSupply = tSupply.sub(_tOwned[_excluded[i]]);
    }
    if (rSupply < _rTotal.div(_tTotal)) return (_rTotal, _tTotal);
    return (rSupply, tSupply);
}
```

Recommendation:

Check that the excluded array length is not too big.

Notes:

- addLiquidity function is not used.

Owner privileges (In the period when the owner is not renounced)

- Owner can change tax and liquidity fees.

```
ftrace | funcSig
function setTaxFeePercent(uint256 taxFee⬆) external onlyOwner() {
    _taxFee = taxFee⬆;
}

ftrace | funcSig
function setLiquidityFeePercent(uint256 liquidityFee⬆) external onlyOwner() {
    _liquidityFee = liquidityFee⬆;
}
```

- Owner can change maximum transaction amount.

```
ftrace | funcSig
function setMaxTxAmount(uint256 maxTxAmount⬆) external onlyOwner() {
    _maxTxAmount = maxTxAmount⬆;
}
```

- Owner can exclude from the fee.

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

- Owner can change marketingDivisor.

```
ftrace | funcSig
function setMarketingDivisor(uint256 divisor⬆) external onlyOwner() {
    marketingDivisor = divisor⬆;
}
```

- Owner can change minimum number of tokens to add to liquidity.

```
ftrace | funcSig
function setNumTokensSellToAddToLiquidity(uint256 _minimumTokensBeforeSwap⬆) external onlyOwner() {
    minimumTokensBeforeSwap = _minimumTokensBeforeSwap⬆;
}
```

- Owner can change buyBackUpperLimit.

```
ftrace | funcSig
function setBuybackUpperLimit(uint256 buyBackLimit⬆) external onlyOwner() {
    buyBackUpperLimit = buyBackLimit⬆ * 10**18;
}
```

- Owner can change marketing address.

```
ftrace | funcSig
function setMarketingAddress(address _marketingAddress⬆) external onlyOwner() {
    marketingAddress = payable(_marketingAddress⬆);
}
```

- Owner can manually buyBack.

```
function callMoonShot(uint256 amount⬆) external onlyOwner(){
    // MoonShots will be activated at holder milestones during MoonRise's launch phase, but eventually will be controlled through a community-consensus based dApp.
    // Members will vote on how much BNB should be used in the MoonShot, and when exactly the MoonShot should take place.

    // LIVE HOLDER MILESTONES & MOONSHOT INFO:
    // - MoonRiseCoin.com
    // - (Please join our Telegram using the link posted on our website)

    buyBackTokens(amount⬆ * 10**15); // i.e. "1" would equal 0.001 BNB
}
```

- Owner can withdraw contract BNB balance to marketing address.

```
function manualSend() external onlyOwner {
    uint256 contractETHBalance = address(this).balance;
    payable(marketingAddress).transfer(contractETHBalance);
}
```

- Owner can enable and disable buyBack.

```
ftrace | funcSig
function setBuyBackEnabled(bool _enabled⬆) public onlyOwner {
    buyBackEnabled = _enabled⬆;
    emit BuyBackEnabledUpdated(_enabled⬆);
}
```

- Owner can enable before and after presale modes.

```
function prepareForPreSale() external onlyOwner {
    setSwapAndLiquifyEnabled(false);
    _taxFee = 0;
    _liquidityFee = 0;
    _maxTxAmount = 1000000000 * 10**6 * 10**9;
}

ftrace | funcSig
function afterPreSale() external onlyOwner {
    setSwapAndLiquifyEnabled(true);
    _taxFee = 2;
    _liquidityFee = 9;
    _maxTxAmount = 10000000 * 10**6 * 10**9;
}
```

- **Owner can lock and unlock. By the way, using these functions the owner could retake privileges even after the ownership was renounced.**

```
function lock(uint256 time⬆) public virtual onlyOwner {
    _previousOwner = _owner;
    _owner = address(0);
    _lockTime = block.timestamp + time⬆;
    emit OwnershipTransferred(_owner, address(0));
}

function unlock() public virtual {
    require(_previousOwner == msg.sender, "You don't have permission to unlock");
    require(block.timestamp > _lockTime , "Contract is locked until 7 days");
    emit OwnershipTransferred(_owner, _previousOwner);
    _owner = _previousOwner;
}
```

Conclusion

Smart contracts contain low severity issues! Liquidity pair contract's security is not checked due to out of scope. 5/7 of the liquidity goes to marketing address. The further transfers and operations with the funds raise are not related to this particular contract.

Liquidity locking details are provided by the team:
https://www.pinksale.finance/#/pinklock/record/1583?chain=BSC

TechRate note:

Please check the disclaimer above and note, the audit makes no statements or warranties on business model, investment attractiveness or code sustainability. The report is provided for the only contract mentioned in the report and does not include any other potential contracts deployed by Owner.