auditace.tech

AuditAce
FROM INCEPTION TO SUCCESS

Smart Contract Audit

FOR

BabyMaga

DATED : 5 Feb, 2024

MANUAL TESTING

Centralization – Enabling Trades

Severity: High

Function: Enabling Trades

Status: Open

Overview:

The EnableTrading function permits only the contract owner to activate trading capabilities. Until this function is executed, no investors can buy, sell, or transfer their tokens. This places a high degree of control and centralization in the hands of the contract owner.

```
function Open_Trade() external onlyOwner {
        require(!Trade_Open, "TradeOpen");
        feeProcessingEnabled = true;
        Trade_Open = true;
```

Suggestion:

To reduce centralization and potential manipulation, consider one of the following approaches:

1.Automatically enable trading after a specified condition, such as the completion of a presale, is met.

2.If manual activation is still desired, consider transferring the ownership of the contract to a trustworthy, third-party entity like a certified "PinkSale Safu" developer. This can give investors more confidence in the eventual activation of trading capabilities, mitigating concerns of potential bad-faith actions by the original owner.

AUDIT SUMMARY

Project name – BabyMaga

Date: 5 Feb, 2024

Scope of Audit- Audit Ace was consulted to conduct the smart contract audit of the solidity source codes.

Audit Status: **Passed With High Risk**

Issues Found

Status	Critical	High	Medium	Low	Suggestion
Open	0	1	0	1	2
Acknowledged	0	0	1	0	0
Resolved	0	0	0	0	0

USED TOOLS

Tools:

1- Manual Review:
A line by line code review has been performed by audit ace team.

2- BSC Test Network: All tests were conducted on the BSC Test network, and each test has a corresponding transaction attached to it. These tests can be found in the "Functional Tests" section of the report.

3- Slither :
The code has undergone static analysis using Slither.

Testnet version:
The tests were performed using the contract deployed on the BSC Testnet, which can be found at the following address:
https://testnet.bscscan.com/address/0xcc77f451157fbc13dfc3a85297f9f4ade9c085b9#code

Token Information

Token Name : BabyMaga

Token Symbol: BMAGA

Decimals: 18

Token Supply: 100000000

Network: BscScan

Token Type: BEP-20

Token Address:
0x7ffa3b0e7017CD4466b7D0bE027d769D13913522

Checksum:
Ae032c616934aeb47e6039f76b20d211

Owner:
0x0c0e5D3eA0bD234Dcf6E7357b554b5E92F78359d
(at time of writing the audit)

Deployer:
0xc00278Da6d26f6e17c499a2e1301EC0E73a63D71

TOKEN OVERVIEW

Fees:

Buy Fee: 5%

Sell Fee: 5%

Transfer Fee: 0-0%

Fees Privilege: Owner

Ownership: Owned

Minting: No mint function

Max Tx Amount/ Max Wallet Amount: No

Blacklist: No

Other Privileges:

- **Whitelist to transfer without enabling trades**
- **Enabling trades**

AUDIT METHODOLOGY

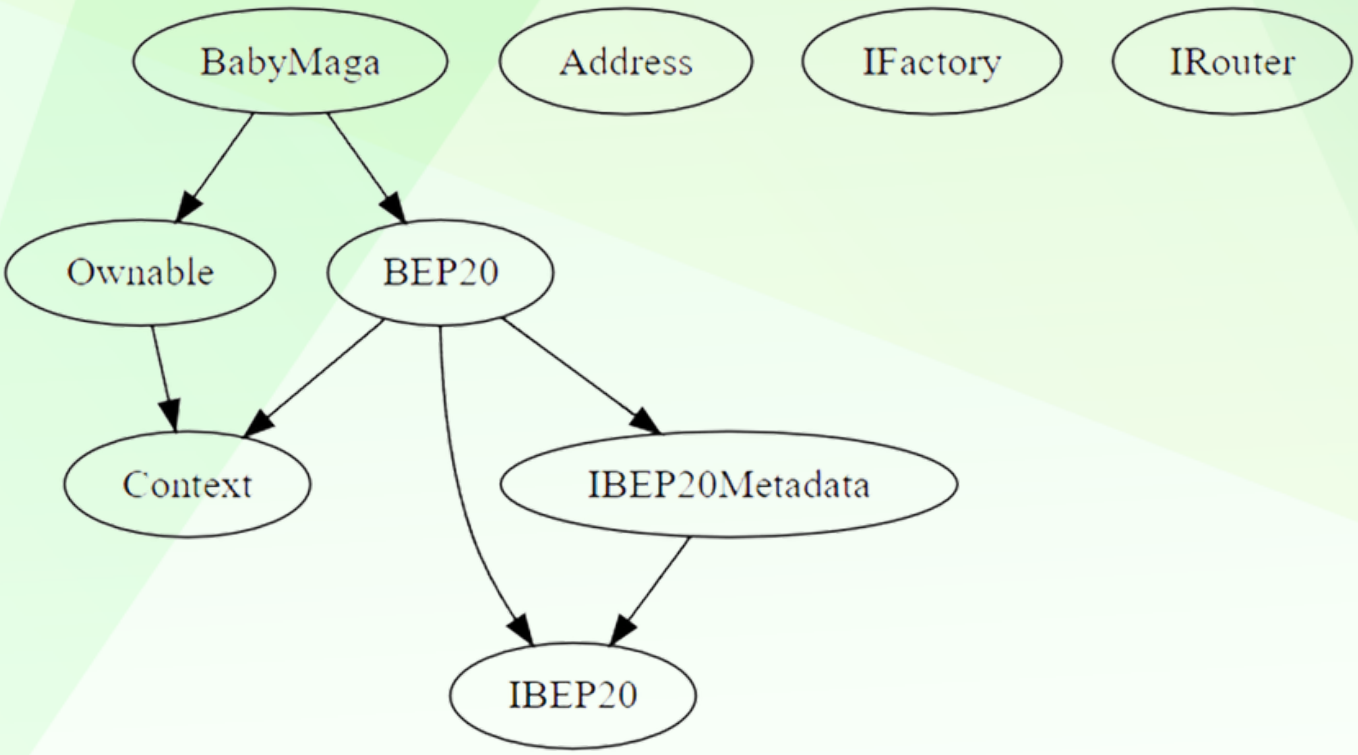
The auditing process will follow a routine as special considerations by Auditace:

- Review of the specifications, sources, and instructions provided to Auditace to make sure the contract logic meets the intentions of the client without exposing the user's funds to risk.
- Manual review of the entire codebase by our experts, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.
- Specification comparison is the process of checking whether the code does what the specifications, sources, and instructions provided to Auditace describe.
- Test coverage analysis determines whether the test cases are covering the code and how much code isexercised when we run the test cases.
- Symbolic execution is analysing a program to determine what inputs cause each part of a program to execute.
- Reviewing the codebase to improve maintainability, security, and control based on the established industry and academic practices.

VULNERABILITY CHECKLIST

- Return values of low-level calls
- Private modifier
- Multiple Sends
- Using Suicide
- Gas Limitand Loops
- Address hardcoded
- Exception Disorder
- Using inline assembly
- Divide before multiply
- Missing Zero Address Validation
- Compiler version not fixed
- **Gasless Send**
- Using block.timestamp
- Re-entrancy
- Tautology or contradiction
- Timestamp Dependence
- Revert/require functions
- Use of tx.origin
- Integer overflow/underflow
- Dangerous strict equalities
- Using SHA3
- Using throw

INHERITANCE TREE



STATIC ANALYSIS

A static analysis of the code was performed using Slither.

No issues were found.

```
INFO:Detectors:
BabyMaga.Liquify(uint256,BabyMaga.Taxes) (BabyMaga.sol#607-642) performs a multiplication on the result of a division:
        - unitBalance = deltaBalance / (denominator - swapTaxes.liquidity) (BabyMaga.sol#623)
        - ethToAddLiquidityWith = unitBalance * swapTaxes.liquidity (BabyMaga.sol#624)
BabyMaga.Liquify(uint256,BabyMaga.Taxes) (BabyMaga.sol#607-642) performs a multiplication on the result of a division:
        - unitBalance = deltaBalance / (denominator - swapTaxes.liquidity) (BabyMaga.sol#623)
        - developmentAmt = unitBalance * 2 * swapTaxes.development (BabyMaga.sol#629)
BabyMaga.Liquify(uint256,BabyMaga.Taxes) (BabyMaga.sol#607-642) performs a multiplication on the result of a division:
        - unitBalance = deltaBalance / (denominator - swapTaxes.liquidity) (BabyMaga.sol#623)
        - buybackAmt = unitBalance * 2 * swapTaxes.buyback (BabyMaga.sol#633)
BabyMaga.Liquify(uint256,BabyMaga.Taxes) (BabyMaga.sol#607-642) performs a multiplication on the result of a division:
        - unitBalance = deltaBalance / (denominator - swapTaxes.liquidity) (BabyMaga.sol#623)
        - marketingAmt = unitBalance * 2 * swapTaxes.marketing (BabyMaga.sol#637)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#divide-before-multiply
INFO:Detectors:
BabyMaga._transfer(address,address,uint256).feesum (BabyMaga.sol#561) is a local variable never initialized
BabyMaga._transfer(address,address,uint256).feeswap (BabyMaga.sol#560) is a local variable never initialized
BabyMaga._transfer(address,address,uint256).currentTaxes (BabyMaga.sol#563) is a local variable never initialized
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#uninitialized-local-variables
INFO:Detectors:
BabyMaga.addLiquidity(uint256,uint256) (BabyMaga.sol#660-672) ignores return value by router.addLiquidityETH{value: ethAmount}(address(this),tokenAmount,0,0,deadWallet,block.timestamp) (BabyMaga.sol#664-671)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-return
INFO:Detectors:
BabyMaga._transfer(address,address,uint256).fee (BabyMaga.sol#562) is written in both
        fee = 0 (BabyMaga.sol#571)
        fee = (amount * feesum) / 100 (BabyMaga.sol#587)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#write-after-write
INFO:Detectors:
BabyMaga.updateLiquidityTreshhold(uint256) (BabyMaga.sol#678-682) should emit an event for:
        - tokenLiquidityThreshold = new_amount * 10 ** decimals() (BabyMaga.sol#681)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-events-arithmetic
INFO:Detectors:
Modifier BabyMaga.lockTheSwap() (BabyMaga.sol#465-471) does not always execute _; or revertReference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-modifier
```

```
INFO:Detectors:
BabyMaga.updateLiquidityTreshhold(uint256) (BabyMaga.sol#678-682) should emit an event for:
        - tokenLiquidityThreshold = new_amount * 10 ** decimals() (BabyMaga.sol#681)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-events-arithmetic
INFO:Detectors:
Modifier BabyMaga.lockTheSwap() (BabyMaga.sol#465-471) does not always execute _; or revertReference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-modifier
INFO:Detectors:
Reentrancy in BabyMaga.Liquify(uint256,BabyMaga.Taxes) (BabyMaga.sol#607-642):
        External calls:
        - swapTokensForETH(toSwap) (BabyMaga.sol#621)
                - router.swapExactTokensForETHSupportingFeeOnTransferTokens(tokenAmount,0,path,address(this),block.timestamp) (BabyMaga.sol#651-657)
        - addLiquidity(tokensToAddLiquidityWith,ethToAddLiquidityWith) (BabyMaga.sol#627)
                - router.addLiquidityETH{value: ethAmount}(address(this),tokenAmount,0,0,deadWallet,block.timestamp) (BabyMaga.sol#664-671)
        External calls sending eth:
        - addLiquidity(tokensToAddLiquidityWith,ethToAddLiquidityWith) (BabyMaga.sol#627)
                - router.addLiquidityETH{value: ethAmount}(address(this),tokenAmount,0,0,deadWallet,block.timestamp) (BabyMaga.sol#664-671)
        State variables written after the call(s):
        - addLiquidity(tokensToAddLiquidityWith,ethToAddLiquidityWith) (BabyMaga.sol#627)
                - _allowances[owner][spender] = amount (BabyMaga.sol#341)
Reentrancy in BabyMaga.transferFrom(address,address,uint256) (BabyMaga.sol#498-513):
        External calls:
        - _transfer(sender,recipient,amount) (BabyMaga.sol#503)
                - router.addLiquidityETH{value: ethAmount}(address(this),tokenAmount,0,0,deadWallet,block.timestamp) (BabyMaga.sol#664-671)
                - (success) = recipient.call{value: amount}() (BabyMaga.sol#353)
                - router.swapExactTokensForETHSupportingFeeOnTransferTokens(tokenAmount,0,path,address(this),block.timestamp) (BabyMaga.sol#651-657)
                - address(developmentWallet).sendValue(developmentAmt) (BabyMaga.sol#631)
                - address(buybackWallet).sendValue(buybackAmt) (BabyMaga.sol#635)
                - address(marketingWallet).sendValue(marketingAmt) (BabyMaga.sol#639)
        External calls sending eth:
        - _transfer(sender,recipient,amount) (BabyMaga.sol#503)
                - router.addLiquidityETH{value: ethAmount}(address(this),tokenAmount,0,0,deadWallet,block.timestamp) (BabyMaga.sol#664-671)
                - (success) = recipient.call{value: amount}() (BabyMaga.sol#353)
        State variables written after the call(s):
        - _approve(sender,_msgSender(),currentAllowance - amount) (BabyMaga.sol#510)
                - _allowances[owner][spender] = amount (BabyMaga.sol#341)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-2
```

STATIC ANALYSIS

```
INFO:Detectors:
Context._msgData() (BabyMaga.sol#12-15) is never used and should be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code
INFO:Detectors:
Pragma version^0.8.19 (BabyMaga.sol#6) necessitates a version too recent to be trusted. Consider deploying with 0.8.18.
solc-0.8.19 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-versions-of-solidity
INFO:Detectors:
Low level call in Address.sendValue(address,uint256) (BabyMaga.sol#347-358):
        - (success) = recipient.call{value: amount}() (BabyMaga.sol#353)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#low-level-calls
INFO:Detectors:
Function IRouter.WETH() (BabyMaga.sol#408) is not in mixedCase
Function BabyMaga.Liquify(uint256,BabyMaga.Taxes) (BabyMaga.sol#607-642) is not in mixedCase
Parameter BabyMaga.updateLiquidityTreshhold(uint256).new_amount (BabyMaga.sol#678) is not in mixedCase
Parameter BabyMaga.updateExemptFee(address,bool)._address (BabyMaga.sol#709) is not in mixedCase
Variable BabyMaga.genesis_block (BabyMaga.sol#444) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions
INFO:Detectors:
Redundant expression "this (BabyMaga.sol#13)" inContext (BabyMaga.sol#7-16)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#redundant-statements
INFO:Detectors:
BabyMaga.constructor() (BabyMaga.sol#472-487) uses literals with too many digits:
        - _tokengeneration(msg.sender,100000000 * 10 ** decimals()) (BabyMaga.sol#473)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits
INFO:Detectors:
BabyMaga._lastSell (BabyMaga.sol#463) is never used in BabyMaga (BabyMaga.sol#434-736)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-state-variable
INFO:Detectors:
BabyMaga.deadline (BabyMaga.sol#445) should be constant
BabyMaga.launchtax (BabyMaga.sol#446) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant
INFO:Detectors:
BabyMaga.pair (BabyMaga.sol#437) should be immutable
BabyMaga.router (BabyMaga.sol#436) should be immutable
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-immutable
INFO:Slither:BabyMaga.sol analyzed (9 contracts with 93 detectors), 34 result(s) found
```

FUNCTIONAL TESTING

1- Approve (passed):
https://testnet.bscscan.com/tx/0x17141b0ebee9b56321f0275a780533395a1c2a84c78ead1c8818db058dc13f7d

2- Increase Allowance (passed):
https://testnet.bscscan.com/tx/0xf08fa939763f2ea4965f455646fac8d87de5a2667771370cbf0524491ab71608

3- Decrease Allowance (passed):
https://testnet.bscscan.com/tx/0x403c719ed9e30a4fba135efad0dc166231775a961e10f532797e41d09b45ec43

4- Update Marketing Wallet (passed):
https://testnet.bscscan.com/tx/0x02c794106565721b014d426d330e1cfad21516874bc949a2995b806d4bc4fb93

5- Update Development Wallet (passed):
https://testnet.bscscan.com/tx/0xe7e03f2eb65703e8857a3ccd02a97b60745566e085c28b487dd84b48b31d133a

6- Update Buyback Wallet (passed):
https://testnet.bscscan.com/tx/0x5ff190253040c3a32b3a04126296371bb7356c3092c416334747f591a29eefc9

7- Transfer (passed):
https://testnet.bscscan.com/tx/0x96916db594c4bd49ce1627eae57c3a5bb3edb78c000abc98d72f10e2222f4bfd

POINTS TO NOTE

- The owner can transfer ownership.
- The owner can renounce ownership.
- The owner can Enable trading.
- The owner can update the liquidity provided.
- The owner can update the liquidity threshhold.
- The owner can rescue trapped tokens.
- The owner can update the marketing/development/buyback wallet address.

CLASSIFICATION OF RISK

Severity	Description
Critical	These vulnerabilities could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.
High-Risk	A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way.
Medium-Risk	A vulnerability that could affect the desired outcome of executing the contract in a specific scenario.
Low-Risk	A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective.
Gas Optimization /Suggestion	A vulnerability that has an informational character but is not affecting any of the code.

Findings

Severity	Found
Critical	0
High-Risk	1
Medium-Risk	1
Low-Risk	1
Gas Optimization / Suggestions	2

MANUAL TESTING

Centralization – Enabling Trades

Severity: High

Function: Enabling Trades

Status: Open

Overview:

The EnableTrading function permits only the contract owner to activate trading capabilities. Until this function is executed, no investors can buy, sell, or transfer their tokens. This places a high degree of control and centralization in the hands of the contract owner.

```
function Open_Trade() external onlyOwner {
        require(!Trade_Open, "TradeOpen");
        feeProcessingEnabled = true;
        Trade_Open = true;
```

Suggestion:

To reduce centralization and potential manipulation, consider one of the following approaches:

1.Automatically enable trading after a specified condition, such as the completion of a presale, is met.

2.If manual activation is still desired, consider transferring the ownership of the contract to a trustworthy, third-party entity like a certified "PinkSale Safu" developer. This can give investors more confidence in the eventual activation of trading capabilities, mitigating concerns of potential bad-faith actions by the original owner.

MANUAL TESTING

Centralization – Missing Require Check

Severity: Medium

Function: UpdateWalletMarketing/updateDevelopmentWallet/updateBuyBackWallet

Status: Acknowledged

Overview:
The owner can set any arbitrary address excluding zero address as this is not recommended because if the owner will set the address to the contract address, then the Eth will not be sent to that address and the transaction will fail and this will lead to a potential **honeypot** in the contract.

```
function updateMarketingWallet(address newWallet) external onlyOwner {
        require(newWallet != address(this), "Fee Address cannot be Contract Ad-
dress");
        require(newWallet != address(0), "Fee Address cannot be zero address");
        marketingWallet = newWallet;
    }

    function updateDevlopmentWallet(address newWallet) external onlyOwner {
        require(newWallet != address(this), "Fee Address cannot be Contract Ad-
dress");
        require(newWallet != address(0), "Fee Address cannot be zero address");
        developmentWallet = newWallet;
    }

    function updateBuybackWallet(address newWallet) external onlyOwner {
        require(newWallet != address(this), "Fee Address cannot be Contract Ad-
dress");
        require(newWallet != address(0), "Fee Address cannot be zero address");
        buybackWallet = newWallet;
    }
```

Suggestion:
It is recommended that the address should not be able to set as a contract address.

Alleviation : Team will not add any other address and probably renouce immediately after launch

MANUAL TESTING

Centralization – Missing Events

Severity: Low

Subject: Missing Events

Status: Open

Overview:

They serve as a mechanism for emitting and recording data onto the blockchain, making it transparent and easily accessible.

```
 function updateLiquidityTreshhold(uint256 new_amount) external onlyOwner {
        require(new_amount <= 1e6,"Swap threshold amount should be lower or equal
to 1% of tokens");
        require(new_amount >= 1e4,"Swap threshold amount should be greater than  or
equal to 0.01%% of tokens");
        tokenLiquidityThreshold = new_amount * 10**decimals();
    }
function enableTrading() external onlyOwner {
        require(!tradingEnabled, "Cannot re-enable trading");
        tradingEnabled = true;
        providingLiquidity = true;
        genesis_block = block.number;
    }
function updateMarketingWallet(address newWallet) external onlyOwner {
        require(newWallet != address(this), "Fee Address cannot be Contract Ad-
dress");
        require(newWallet != address(0), "Fee Address cannot be zero address");
        marketingWallet = newWallet;
    }
function updateDevlopmentWallet(address newWallet) external onlyOwner {
        require(newWallet != address(this), "Fee Address cannot be Contract Ad-
dress");
        require(newWallet != address(0), "Fee Address cannot be zero address");
        developmentWallet = newWallet;
    }
function updateBuybackWallet(address newWallet) external onlyOwner {
        require(newWallet != address(this), "Fee Address cannot be Contract Ad-
dress");
        require(newWallet != address(0), "Fee Address cannot be zero address");
        buybackWallet = newWallet;
    }
function updateExemptFee(address _address, bool state) external onlyOwner {
        exemptFee[_address] = state;
    }
```

MANUAL TESTING

Optimization

Severity: Informational

Function: Floating Pragma

Status: Open

Overview:

It is considered best practice to pick one compiler version and stick with it. With a floating pragma, contracts may accidentally be deployed using an outdated.

```
pragma solidity ^0.8.19;
```

Suggestion:

Adding the latest constant version of solidity is recommended, as this prevents the unintentional deployment of a contract with an outdated compiler that contains unresolved bugs.

MANUAL TESTING

Optimization

Severity: Informational

Function: Remove unused code.

Status: Open

Overview:

Unused variables are allowed in Solidity, and they do. not pose a direct security issue. It is the best practice. though to avoid them.

```
function _msgData() internal view virtual returns (bytes calldata) {
        this; // silence state mutability warning without generating bytecode - see
https://github.com/ethereum/solidity/issues/2691
        return msg.data;
    }
```

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