Audit Report for **FatTokenV5**
Date: 09 March 2024
Audit Result: **Fail**

Token Address: 0x509e2196c9786F49B574df838DcE18c0884f70a6

Name: Falcon404

Symbol: Falcon404

Decimals: 18

Network: BscScan

Token Type: BEP-20

Owner: 0x5E67bdb740De026E91C49073f6967578D2894a0b

Deployer: 0x5E67bdb740De026E91C49073f6967578D2894a0b

Token Supply: 10000000000

Checksum: A2032c616934aeb47e6039f76b20d231

Testnet:

Token Overview:

Buy Fee: 5-25%

Sell Fee: 5-25%

Fee Privilege: Owner

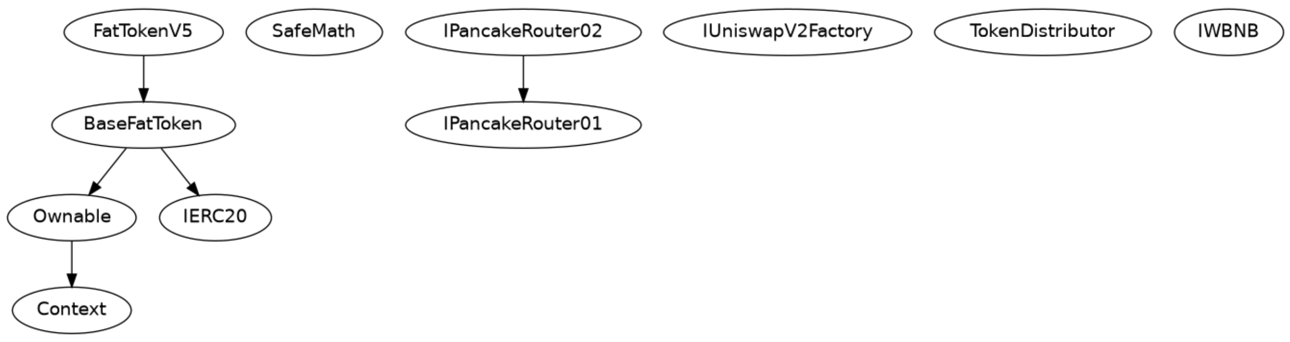
Ownership: Owned

Minting: None

Max Tx: No

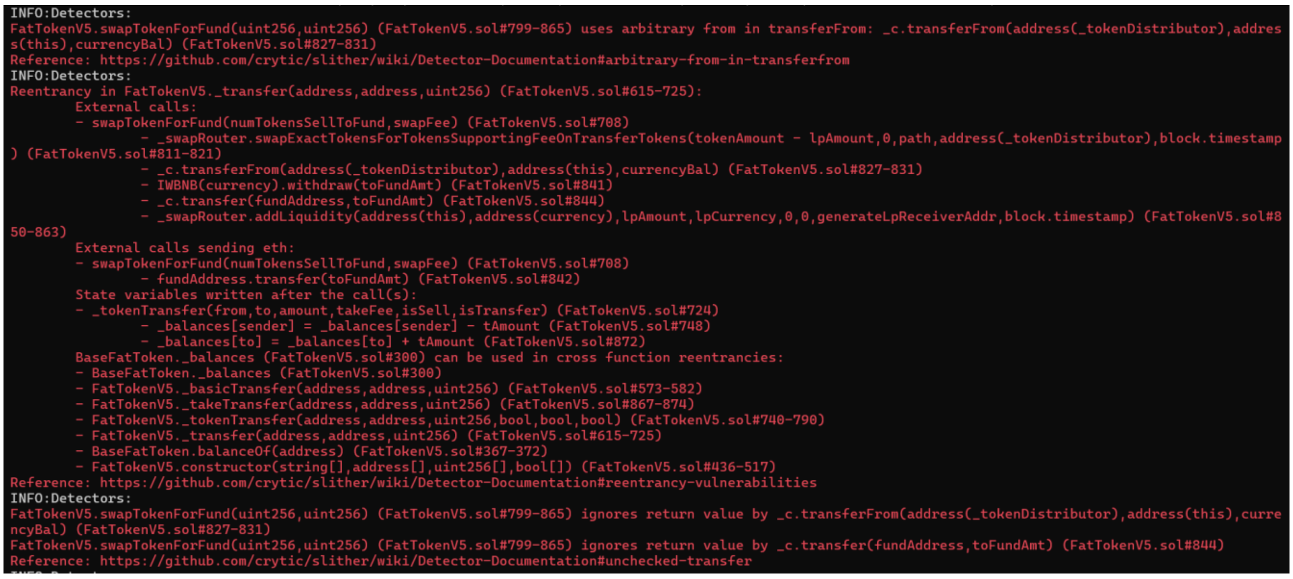
Blacklist: YES

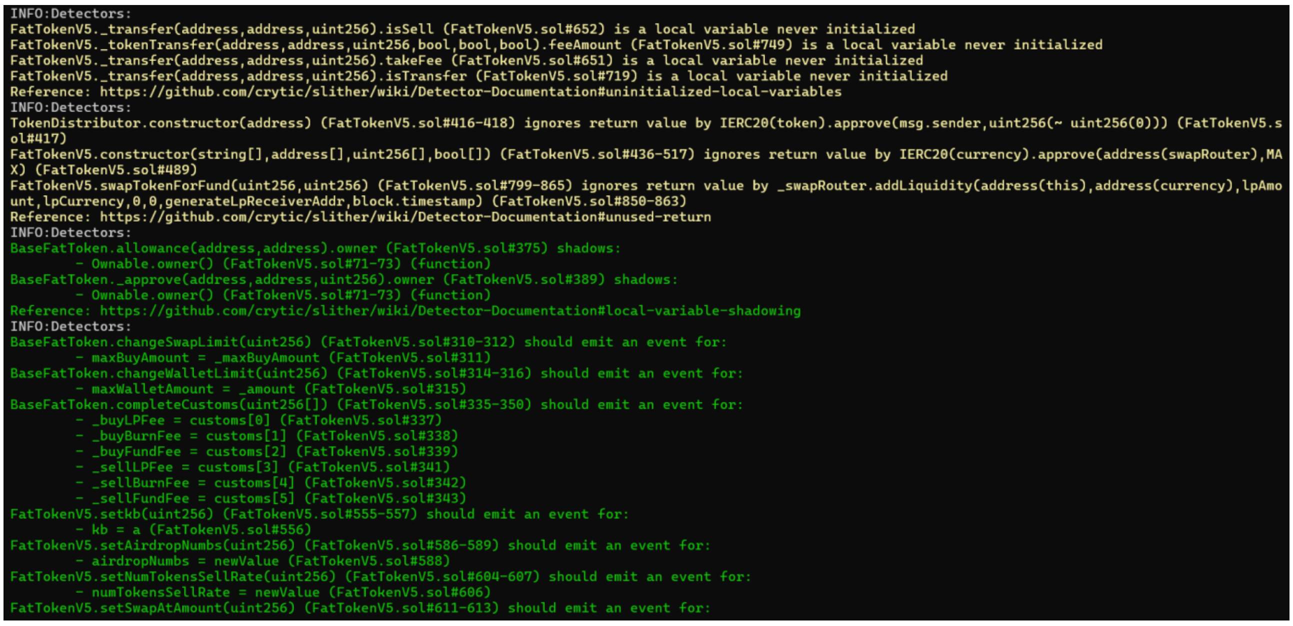
Inheritance Tree


$$\begin{tikzcd}
\text{FatTokenV5} \arrow[d] & & \text{SafeMath} & \text{IPancakeRouter02} \arrow[d] & \text{IUniswapV2Factory} & \text{TokenDistributor} & \text{IWBNB} \\
\text{BaseFatToken} \arrow[d] \arrow[dr] & & & \text{IPancakeRouter01} & & & \\
\text{Ownable} \arrow[d] & \text{IERC20} & & & & & \\
\text{Context} & & & & & &
\end{tikzcd}$$

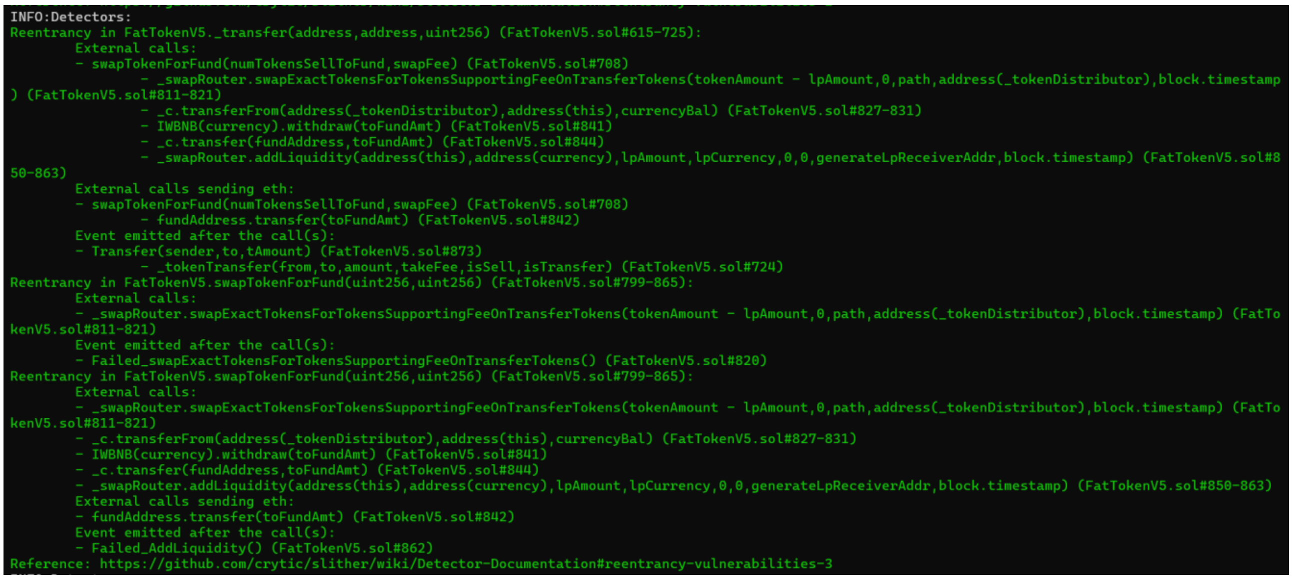
Static Analysis

A static analysis of the code was performed using Slither. No issues were found.

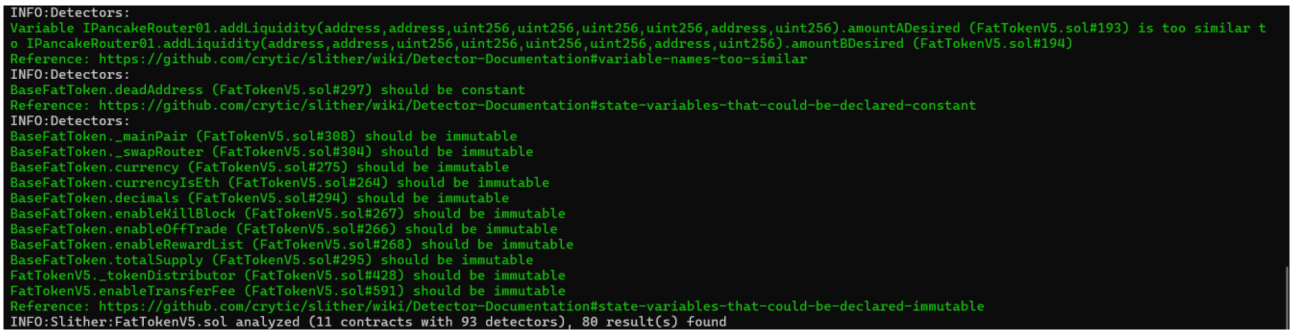

```
INFO:Detectors:
FatTokenV5.swapTokenForFund(uint256,uint256) (FatTokenV5.sol#799-865) uses arbitrary from in transferFrom: _c.transferFrom(address(_tokenDistributor),addres
s(this),currencyBal) (FatTokenV5.sol#827-831)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#arbitrary-from-in-transferfrom
INFO:Detectors:
Reentrancy in FatTokenV5._transfer(address,address,uint256) (FatTokenV5.sol#615-725):
        External calls:
        - swapTokenForFund(numTokensSellToFund,swapFee) (FatTokenV5.sol#708)
                - _swapRouter.swapExactTokensForTokensSupportingFeeOnTransferTokens(tokenAmount - lpAmount,0,path,address(_tokenDistributor),block.timestamp
) (FatTokenV5.sol#811-821)
                - _c.transferFrom(address(_tokenDistributor),address(this),currencyBal) (FatTokenV5.sol#827-831)
                - IWBNB(currency).withdraw(toFundAmt) (FatTokenV5.sol#841)
                - _c.transfer(fundAddress,toFundAmt) (FatTokenV5.sol#844)
                - _swapRouter.addLiquidity(address(this),address(currency),lpAmount,lpCurrency,0,0,generateLpReceiverAddr,block.timestamp) (FatTokenV5.sol#8
50-863)
        External calls sending eth:
        - swapTokenForFund(numTokensSellToFund,swapFee) (FatTokenV5.sol#708)
                - fundAddress.transfer(toFundAmt) (FatTokenV5.sol#842)
        State variables written after the call(s):
        - _tokenTransfer(from,to,amount,takeFee,isSell,isTransfer) (FatTokenV5.sol#724)
                - _balances[sender] = _balances[sender] - tAmount (FatTokenV5.sol#748)
                - _balances[to] = _balances[to] + tAmount (FatTokenV5.sol#872)
        BaseFatToken._balances (FatTokenV5.sol#300) can be used in cross function reentrancies:
        - BaseFatToken._balances (FatTokenV5.sol#300)
        - FatTokenV5._basicTransfer(address,address,uint256) (FatTokenV5.sol#573-582)
        - FatTokenV5._takeTransfer(address,address,uint256) (FatTokenV5.sol#867-874)
        - FatTokenV5._tokenTransfer(address,address,uint256,bool,bool,bool) (FatTokenV5.sol#740-790)
        - FatTokenV5._transfer(address,address,uint256) (FatTokenV5.sol#615-725)
        - BaseFatToken.balanceOf(address) (FatTokenV5.sol#367-372)
        - FatTokenV5.constructor(string[],address[],uint256[],bool[]) (FatTokenV5.sol#436-517)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities
INFO:Detectors:
FatTokenV5.swapTokenForFund(uint256,uint256) (FatTokenV5.sol#799-865) ignores return value by _c.transferFrom(address(_tokenDistributor),address(this),curre
ncyBal) (FatTokenV5.sol#827-831)
FatTokenV5.swapTokenForFund(uint256,uint256) (FatTokenV5.sol#799-865) ignores return value by _c.transfer(fundAddress,toFundAmt) (FatTokenV5.sol#844)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unchecked-transfer
```



```
INFO:Detectors:
FatTokenV5._transfer(address,address,uint256).isSell (FatTokenV5.sol#652) is a local variable never initialized
FatTokenV5._tokenTransfer(address,address,uint256,bool,bool,bool).feeAmount (FatTokenV5.sol#749) is a local variable never initialized
FatTokenV5._transfer(address,address,uint256).takeFee (FatTokenV5.sol#651) is a local variable never initialized
FatTokenV5._transfer(address,address,uint256).isTransfer (FatTokenV5.sol#719) is a local variable never initialized
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#uninitialized-local-variables
INFO:Detectors:
TokenDistributor.constructor(address) (FatTokenV5.sol#416-418) ignores return value by IERC20(token).approve(msg.sender,uint256(~ uint256(0))) (FatTokenV5.s
ol#417)
FatTokenV5.constructor(string[],address[],uint256[],bool[]) (FatTokenV5.sol#436-517) ignores return value by IERC20(currency).approve(address(swapRouter),MA
X) (FatTokenV5.sol#489)
FatTokenV5.swapTokenForFund(uint256,uint256) (FatTokenV5.sol#799-865) ignores return value by _swapRouter.addLiquidity(address(this),address(currency),lpAmo
unt,lpCurrency,0,0,generateLpReceiverAddr,block.timestamp) (FatTokenV5.sol#850-863)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-return
INFO:Detectors:
BaseFatToken.allowance(address,address).owner (FatTokenV5.sol#375) shadows:
        - Ownable.owner() (FatTokenV5.sol#71-73) (function)
BaseFatToken._approve(address,address,uint256).owner (FatTokenV5.sol#389) shadows:
        - Ownable.owner() (FatTokenV5.sol#71-73) (function)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#local-variable-shadowing
INFO:Detectors:
BaseFatToken.changeSwapLimit(uint256) (FatTokenV5.sol#310-312) should emit an event for:
        - maxBuyAmount = _maxBuyAmount (FatTokenV5.sol#311)
BaseFatToken.changeWalletLimit(uint256) (FatTokenV5.sol#314-316) should emit an event for:
        - maxWalletAmount = _amount (FatTokenV5.sol#315)
BaseFatToken.completeCustoms(uint256[]) (FatTokenV5.sol#335-350) should emit an event for:
        - _buyLPFee = customs[0] (FatTokenV5.sol#337)
        - _buyBurnFee = customs[1] (FatTokenV5.sol#338)
        - _buyFundFee = customs[2] (FatTokenV5.sol#339)
        - _sellLPFee = customs[3] (FatTokenV5.sol#341)
        - _sellBurnFee = customs[4] (FatTokenV5.sol#342)
        - _sellFundFee = customs[5] (FatTokenV5.sol#343)
FatTokenV5.setkb(uint256) (FatTokenV5.sol#555-557) should emit an event for:
        - kb = a (FatTokenV5.sol#556)
FatTokenV5.setAirdropNumbs(uint256) (FatTokenV5.sol#586-589) should emit an event for:
        - airdropNumbs = newValue (FatTokenV5.sol#588)
FatTokenV5.setNumTokensSellRate(uint256) (FatTokenV5.sol#604-607) should emit an event for:
        - numTokensSellRate = newValue (FatTokenV5.sol#606)
FatTokenV5.setSwapAtAmount(uint256) (FatTokenV5.sol#611-613) should emit an event for:
```



```
INFO:Detectors:
Reentrancy in FatTokenV5._transfer(address,address,uint256) (FatTokenV5.sol#615-725):
        External calls:
        - swapTokenForFund(numTokensSellToFund,swapFee) (FatTokenV5.sol#708)
                - _swapRouter.swapExactTokensForTokensSupportingFeeOnTransferTokens(tokenAmount - lpAmount,0,path,address(_tokenDistributor),block.timestamp
) (FatTokenV5.sol#811-821)
                - _c.transferFrom(address(_tokenDistributor),address(this),currencyBal) (FatTokenV5.sol#827-831)
                - IWBNB(currency).withdraw(toFundAmt) (FatTokenV5.sol#841)
                - _c.transfer(fundAddress,toFundAmt) (FatTokenV5.sol#844)
                - _swapRouter.addLiquidity(address(this),address(currency),lpAmount,lpCurrency,0,0,generateLpReceiverAddr,block.timestamp) (FatTokenV5.sol#8
50-863)
        External calls sending eth:
        - swapTokenForFund(numTokensSellToFund,swapFee) (FatTokenV5.sol#708)
                - fundAddress.transfer(toFundAmt) (FatTokenV5.sol#842)
        Event emitted after the call(s):
        - Transfer(sender,to,tAmount) (FatTokenV5.sol#873)
                - _tokenTransfer(from,to,amount,takeFee,isSell,isTransfer) (FatTokenV5.sol#724)
Reentrancy in FatTokenV5.swapTokenForFund(uint256,uint256) (FatTokenV5.sol#799-865):
        External calls:
        - _swapRouter.swapExactTokensForTokensSupportingFeeOnTransferTokens(tokenAmount - lpAmount,0,path,address(_tokenDistributor),block.timestamp) (FatTo
kenV5.sol#811-821)
        Event emitted after the call(s):
        - Failed_swapExactTokensForTokensSupportingFeeOnTransferTokens() (FatTokenV5.sol#820)
Reentrancy in FatTokenV5.swapTokenForFund(uint256,uint256) (FatTokenV5.sol#799-865):
        External calls:
        - _swapRouter.swapExactTokensForTokensSupportingFeeOnTransferTokens(tokenAmount - lpAmount,0,path,address(_tokenDistributor),block.timestamp) (FatTo
kenV5.sol#811-821)
        - _c.transferFrom(address(_tokenDistributor),address(this),currencyBal) (FatTokenV5.sol#827-831)
        - IWBNB(currency).withdraw(toFundAmt) (FatTokenV5.sol#841)
        - _c.transfer(fundAddress,toFundAmt) (FatTokenV5.sol#844)
        - _swapRouter.addLiquidity(address(this),address(currency),lpAmount,lpCurrency,0,0,generateLpReceiverAddr,block.timestamp) (FatTokenV5.sol#850-863)
        External calls sending eth:
        - fundAddress.transfer(toFundAmt) (FatTokenV5.sol#842)
        Event emitted after the call(s):
        - Failed_AddLiquidity() (FatTokenV5.sol#862)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#reentrancy-vulnerabilities-3
```



```
INFO:Detectors:
Variable IPancakeRouter01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountADesired (FatTokenV5.sol#193) is too similar t
o IPancakeRouter01.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountBDesired (FatTokenV5.sol#194)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar
INFO:Detectors:
BaseFatToken.deadAddress (FatTokenV5.sol#297) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant
INFO:Detectors:
BaseFatToken._mainPair (FatTokenV5.sol#308) should be immutable
BaseFatToken._swapRouter (FatTokenV5.sol#304) should be immutable
BaseFatToken.currency (FatTokenV5.sol#275) should be immutable
BaseFatToken.currencyIsEth (FatTokenV5.sol#264) should be immutable
BaseFatToken.decimals (FatTokenV5.sol#294) should be immutable
BaseFatToken.enableKillBlock (FatTokenV5.sol#267) should be immutable
BaseFatToken.enableOffTrade (FatTokenV5.sol#266) should be immutable
BaseFatToken.enableRewardList (FatTokenV5.sol#268) should be immutable
BaseFatToken.totalSupply (FatTokenV5.sol#295) should be immutable
FatTokenV5._tokenDistributor (FatTokenV5.sol#428) should be immutable
FatTokenV5.enableTransferFee (FatTokenV5.sol#591) should be immutable
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-immutable
INFO:Slither:FatTokenV5.sol analyzed (11 contracts with 93 detectors), 80 result(s) found
```

Ownership Privileges:

- The owner can transfer ownership.
- The owner can renounce ownership.
- The owner can change the swap limit.
- The owner can change the wallet limit.
- The owner can start launch.
- The owner can disable the swap/wallet limit.
- The owner can complete customs.
- The owner can set anti sync enable.
- The owner can set a whitelist address.
- The owner can blacklist the wallet.
- The owner can set Kb.
- The owner can set the transfer fee to not more than 25%.
- The owner can set swap pair list.

Findings:
Critical: 0
High: 4
Medium: 1
Low: 4
Informational & Optimizations: 3

Centralization – Enabling Trades

Severity: High
Function: Launch
Status: Open
Overview:
The Launch 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 launch() external onlyOwner {
        require(startTradeBlock == 0, "already started");
        startTradeBlock = block.number;
    }
```

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.

Centralization – The owner can Blacklist Wallet.

Severity: High
Function: multi bclist
Status: Open
Overview:
The owner can blacklist multiple wallets.

```
 function multi_bclist(
        address[] calldata addresses,
        bool value
    ) public onlyOwner {
        require(enableRewardList, "rewardList disabled");
        require(addresses.length < 201);
        for (uint256 i; i < addresses.length; ++i) {
            _rewardList[addresses[i]] = value;
        }
    }
```

Centralization – The owner can lock the token.

Severity: High
Function: setMaxWalletAmount
Status: Open
Overview:
In this changeWalletLimit.

```
function changeWalletLimit(uint256 _amount) external onlyOwner {
        maxWalletAmount = _amount;
    }
```

Suggestion:
It is recommended that there be a required check for zero address.

Centralization – Unsafe Usage of tx.origin

Severity: High
Subject: Tx.origin
Status: Open
Overview:
Avoid using TX.origin for authorization, another contract can have a method that will call your contract (where the user has some funds for instance) and your contract will authorize that transaction as your address is in tx. origin.

```
_feeWhiteList[tx.origin] = true;
}
```

Suggestion:
You should use msg. sender for authorization (if another contract calls your contract msg.sender will be the address of the contract and not the address of the user who called the contract.

Centralization – Liquidity is added to EOA.

Severity: Medium
Function: addLiquidity
Status: Open
Overview:
Liquidity is added to EOA. It may be drained by the generateLpReceiverAddr.

```
if (lpAmount > 0 && lpCurrency > 0) {
            try
                _swapRouter.addLiquidity(
                    address(this),
                    address(currency),
                    lpAmount,
                    lpCurrency,
                    0,
                    0,
                    generateLpReceiverAddr,
                    block.timestamp
                )
```

Suggestion:
It is suggested that the address should be a contract address or a dead address.

Centralization – Missing Zero Address

Severity: Low
Function: excludeFromLimits
Status: Open
Overview:
functions can take a zero address as a parameter (0x00000...). If a function parameter of address type is not properly validated by checking for zero addresses, there could be serious consequences for the contract's functionality.

```
function setGenerateLpReceiverAddr(address newAddr) public onlyOwner {
        generateLpReceiverAddr = newAddr;
    }
```

Suggestion:
It is suggested that the address should not be zero or dead.

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 setFundAddress(address payable addr) external onlyOwner {
        require(!isContract(addr), "fundaddress is a contract ");
        fundAddress = addr;
        _feeWhiteList[addr] = true;
    }
function setAirdropNumbs(uint256 newValue) public onlyOwner {
        require(newValue <= 3, "newValue must <= 3");
        airdropNumbs = newValue;
    }
function setNumTokensSellRate(uint256 newValue) public onlyOwner {
        require(newValue != 0, "greater than 0");
        numTokensSellRate = newValue;
    }

function setSwapAtAmount(uint256 newValue) public onlyOwner {
        swapAtAmount = newValue;
    }
function setTransferFee(uint256 newValue) public onlyOwner {
        require(newValue <= 2500, "transfer > 25 !");
        transferFee = newValue;
    }
function setGenerateLpReceiverAddr(address newAddr) public onlyOwner {
        generateLpReceiverAddr = newAddr;
    }
```

Suggestion:
Add an event to these important functions where address updation is happening. This can also be marked as an indexed event for better off-chain tracking.

Centralization – Local Variable Shadowing

Severity: Low
Status: Open
Subject: Shadowing Local
Overview:

```
function allowance(address owner, address spender) public view override returns
(uint256) {
        return _allowances[owner][spender];
    }
function _approve(address owner, address spender, uint256 amount) private {
        require(owner != address(0), "BEP20: approve from the zero address");
        require(spender != address(0), "BEP20: approve to the zero address");
        _allowances[owner][spender] = amount;
        emit Approval(owner, spender, amount);
    }
```

Suggestion:
Rename the local variable that shadows another component.

Centralization – Missing Threshhold

Severity: Low
Status: Open
Subject: Missing Threshhold
Overview:

```
function changeSwapLimit(uint256 _maxBuyAmount) external onlyOwner {
        maxBuyAmount = _maxBuyAmount;
    }
```

Suggestion:
It is recommended that there should be a threshhold limit for changeswaplimit.

Optimization

Severity: Informational
Subject: Remove Safe Math
Status: Open
Line: 84-146
Overview:
compiler version above 0.8.0 can control arithmetic overflow/underflow, it is recommended to remove the unwanted code to avoid high gas fees.

Optimization

Severity: **Informational**
Subject: 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 ^0.8.4;
```

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.

Optimization

Severity: **Optimization**
Subject: 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 returns (bytes memory) {
        this; // silence state mutability warning without generating
bytecode - see https://github.com/ethereum/solidity/issues/2691
        return msg.data;
    }
```