auditace.tech

AuditAce
FROM INCEPTION TO SUCCESS

Smart Contract Audit

FOR

PEPE AI CEO

DATED : 8 May 23'

AUDIT SUMMARY

Project name – PEPE AI CEO

Date: 8 May, 2023

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

Audit Status: Passed

Issues Found

Status	Critical	High	Medium	Low	Suggestion
Open	0	1	0	0	13
Acknowledged	0	0	0	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/token/0x6837f492645276d0c9be69c41a40a63ea5db1bf6

Token Information

Token Name : PEPE AI CEO

Token Symbol: PEPE

Decimals: 9

Token Supply: 100,000,000,000,000

Token Address:
0x36c0a3Ed58a6102001FdA8cE88F8fC707ce242aD

Checksum:
51b0cd22e4a4e063910624f3874a98f24bcebb2b

Owner:
0xdd0253F0D31369a693836A26E545fbD66E0C97fE
(at time of writing the audit)

Deployer:
0x0Bd22D8a2624A16847aF7aedAB6ddCd9cF84c50b

TOKEN OVERVIEW

Fees:

Buy Fees: 5%

Sell Fees: 5%

Transfer Fees: 5%

Fees Privilege: Owner

Ownership: Owned

Minting: No mint function

Max Tx Amount/ Max Wallet Amount: No

Blacklist: No

Other Privileges: changing swap threshold

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

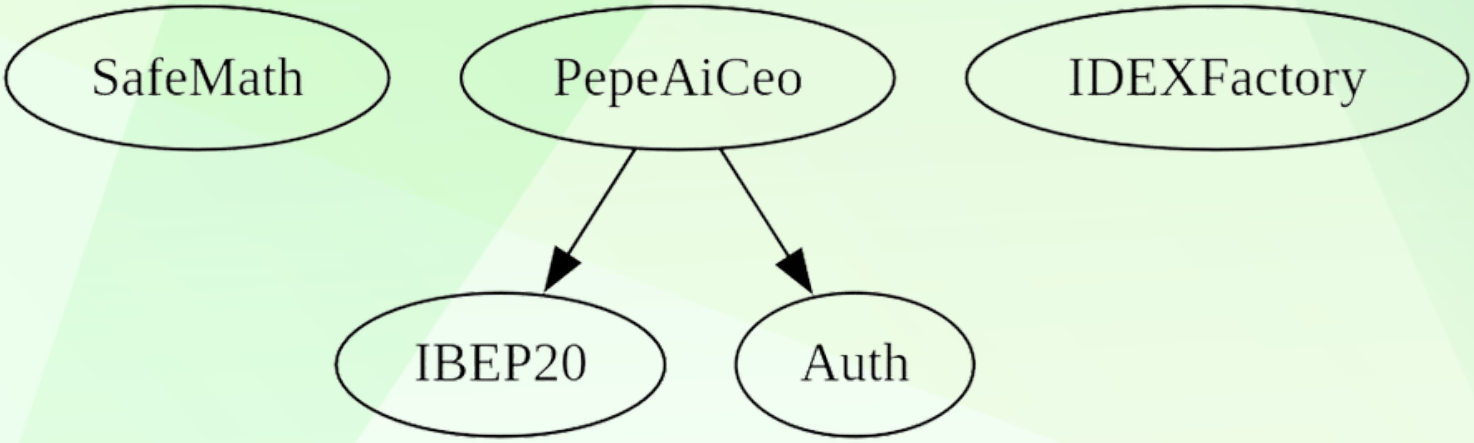
CLASSIFICATION OF RISK

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	0
Low-Risk	0
Gas Optimization / Suggestions	13

INHERITANCE TREE



POINTS TO NOTE

It should be noted that below details only apply to the current version of the contract deployed at the address : **0x36c0a3Ed58a6102001FdA8cE88F8fC707ce242aD**

- Owner is not able to change buy/sell/transfer fees at current version of the contract (5%)
- Owner is not able to set max buy/sell/transfer/hold amount
- Owner is not able to blacklist an arbitrary wallet
- Owner is not able able to limit buys/transfers/sells by a max amount as limit
- Owner is not able to mint new tokens
- Trades are already enable

CONTRACT ASSESMENT

Contract	Type	Bases		
└	**Function Name**	**Visibility**	**Mutability**	**Modifiers**
IERC165	Interface			
└	supportsInterface	External ❗		NO ❗
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 🔒		
IBEP20	Interface			
└	totalSupply	External ❗		NO ❗
└	decimals	External ❗		NO ❗
└	symbol	External ❗		NO ❗
└	name	External ❗		NO ❗
└	getOwner	External ❗		NO ❗
└	balanceOf	External ❗		NO ❗
└	transfer	External ❗	🛑	NO ❗
└	burn	External ❗	🛑	NO ❗
└	allowance	External ❗		NO ❗
└	approve	External ❗	🛑	NO ❗
└	transferFrom	External ❗	🛑	NO ❗
Auth	Implementation			
└	<Constructor>	Public ❗	🛑	NO ❗
└	isOwner	Public ❗		NO ❗
└	renounceOwnership	Public ❗	🛑	onlyOwner
└	transferOwnership	Public ❗	🛑	onlyOwner
IDEXFactory	Interface			
└	createPair	External ❗	🛑	NO ❗

CONTRACT ASSESMENT

IDEXRouter	Interface			
└	factory	External ❗		NO ❗	
└	WETH	External ❗		NO ❗	
└	addLiquidity	External ❗	🛑	NO ❗	
└	addLiquidityETH	External ❗	💵	NO ❗	
└	swapExactTokensForTokensSupportingFeeOnTransferTokens	External ❗	🛑	NO ❗	
└	swapExactETHForTokensSupportingFeeOnTransferTokens	External ❗	💵	NO ❗	
└	swapExactTokensForETHSupportingFeeOnTransferTokens	External ❗	🛑	NO ❗	
IDividendDistributor	Interface			
└	setDistributionCriteria	External ❗	🛑	NO ❗	
└	setShare	External ❗	🛑	NO ❗	
└	deposit	External ❗	💵	NO ❗	
└	process	External ❗	🛑	NO ❗	
DividendDistributor	Implementation	IDividendDistributor		
└	<Constructor>	Public ❗	🛑	NO ❗	
└	setDistributionCriteria	External ❗	🛑	onlyToken
└	setShare	External ❗	🛑	onlyToken
└	deposit	External ❗	💵	onlyToken
└	process	External ❗	🛑	onlyToken
└	shouldDistribute	Internal 🔒		
└	distributeDividend	Internal 🔒	🛑	
└	claimDividend	External ❗	🛑	onlyToken
└	getUnpaidEarnings	Public ❗		NO ❗	
└	getCumulativeDividends	Internal 🔒		
└	addShareholder	Internal 🔒	🛑	
└	removeShareholder	Internal 🔒	🛑	
└	setDividendTokenAddress	External ❗	🛑	onlyToken
PepeAiCeo	Implementation	IBEP20, Auth		
└	<Constructor>	Public ❗	🛑	Auth
└	<Receive Ether>	External ❗	💵	NO ❗	
└	totalSupply	External ❗		NO ❗	
└	decimals	External ❗		NO ❗	
└	symbol	External ❗		NO ❗	
└	name	External ❗		NO ❗	
└	getOwner	External ❗		NO ❗	
└	balanceOf	Public ❗		NO ❗	
└	allowance	External ❗		NO ❗	
└	approve	Public ❗	🛑	NO ❗	
└	approveMax	External ❗	🛑	NO ❗	

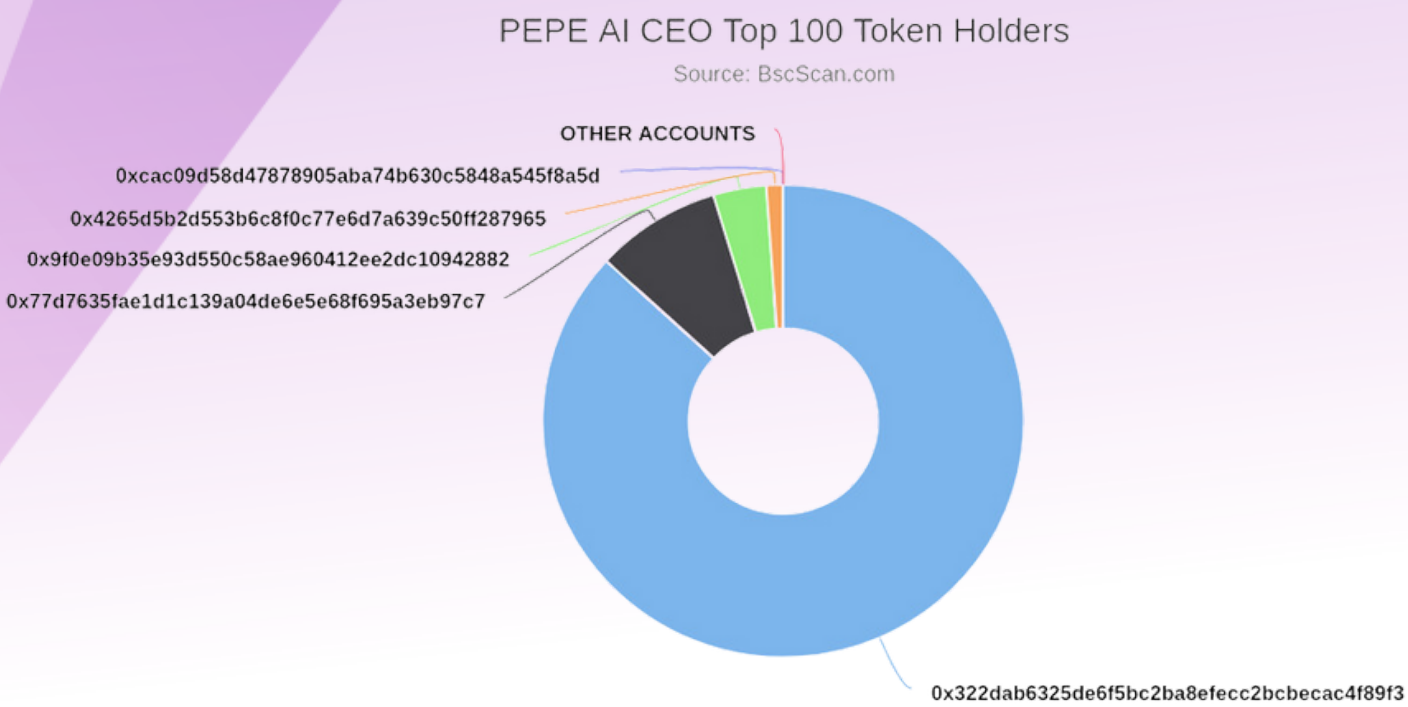
CONTRACT ASSESMENT

└	burn	External ❗	🛑	NO ❗
└	transfer	External ❗	🛑	NO ❗
└	transferFrom	External ❗	🛑	NO ❗
└	_transferFrom	Internal 🔒	🛑	
└	_basicTransfer	Internal 🔒	🛑	
└	shouldTakeFee	Internal 🔒		
└	shouldTakeFeer	Internal 🔒		
└	getTotalFee	Public ❗		NO ❗
└	getMultipliedFee	Public ❗		NO ❗
└	takeFee	Internal 🔒	🛑	
└	shouldSwapBack	Internal 🔒		
└	swapBack	Internal 🔒	🛑	swapping
└	buyTokens	Internal 🔒	🛑	swapping
└	launched	Internal 🔒		
└	setIsDividendExempt	External ❗	🛑	onlyOwner
└	setIsFeeExempt	External ❗	🛑	onlyOwner
└	setFeeReceivers	External ❗	🛑	onlyOwner
└	setSwapBackSettings	External ❗	🛑	onlyOwner
└	setTargetLiquidity	External ❗	🛑	onlyOwner
└	manualSend	External ❗	🛑	NO ❗
└	setDistributionCriteria	External ❗	🛑	onlyOwner
└	claimDividend	External ❗	🛑	NO ❗
└	getUnpaidEarnings	Public ❗		NO ❗
└	setDistributorSettings	External ❗	🛑	onlyOwner
└	getCirculatingSupply	Public ❗		NO ❗
└	getLiquidityBacking	Public ❗		NO ❗
└	isOverLiquified	Public ❗		NO ❗

Legend

Symbol	Meaning
🛑	Function can modify state
💵	Function is payable

TOKENOMICS AT TIME OF AUDIT



STATIC ANALYSIS

```
Variable PepeAiCeo.REWARD (contracts/Token.sol#469) is not in mixedCase
Variable PepeAiCeo.WBNB (contracts/Token.sol#470) is not in mixedCase
Variable PepeAiCeo.DEAD (contracts/Token.sol#471) is not in mixedCase
Variable PepeAiCeo.ZERO (contracts/Token.sol#472) is not in mixedCase
Constant PepeAiCeo._name (contracts/Token.sol#474) is not in UPPER_CASE_WITH_UNDERSCORES
Constant PepeAiCeo._symbol (contracts/Token.sol#475) is not in UPPER_CASE_WITH_UNDERSCORES
Constant PepeAiCeo._decimals (contracts/Token.sol#476) is not in UPPER_CASE_WITH_UNDERSCORES
Variable PepeAiCeo._totalSupply (contracts/Token.sol#477) is not in mixedCase
Variable PepeAiCeo._balances (contracts/Token.sol#479) is not in mixedCase
Variable PepeAiCeo._allowances (contracts/Token.sol#480) is not in mixedCase
Variable PepeAiCeo.ts_Project (contracts/Token.sol#510) is not in mixedCase
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions

Variable IDEXRouter.addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountADesired (contracts/Token.sol#220) is too similar to IDEXRouter.a
ddLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256).amountBDesired (contracts/Token.sol#221)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#variable-names-too-similar

PepeAiCeo.slitherConstructorVariables() (contracts/Token.sol#466-929) uses literals with too many digits:
        - _totalSupply = 100000000000000 * (10 ** _decimals) (contracts/Token.sol#477)
PepeAiCeo.slitherConstructorVariables() (contracts/Token.sol#466-929) uses literals with too many digits:
        - distributorGas = 300000 (contracts/Token.sol#515)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#too-many-digits

PepeAiCeo.REWARD (contracts/Token.sol#469) is never used in PepeAiCeo (contracts/Token.sol#466-929)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#unused-state-variable

DividendDistributor.WBNB (contracts/Token.sol#289) should be constant
DividendDistributor.dividendsPerShareAccuracyFactor (contracts/Token.sol#299) should be constant
PepeAiCeo.DEAD (contracts/Token.sol#471) should be constant
PepeAiCeo.REWARD (contracts/Token.sol#469) should be constant
PepeAiCeo.WBNB (contracts/Token.sol#470) should be constant
PepeAiCeo.ZERO (contracts/Token.sol#472) should be constant
PepeAiCeo._totalSupply (contracts/Token.sol#477) should be constant
PepeAiCeo.buyFeeDenominator (contracts/Token.sol#489) should be constant
PepeAiCeo.buyfeeburn (contracts/Token.sol#490) should be constant
PepeAiCeo.liquidityBuyFee (contracts/Token.sol#485) should be constant
PepeAiCeo.liquiditySellFee (contracts/Token.sol#492) should be constant
PepeAiCeo.marketingBuyFee (contracts/Token.sol#486) should be constant
PepeAiCeo.marketingSellFee (contracts/Token.sol#493) should be constant
PepeAiCeo.projectBuyFee (contracts/Token.sol#487) should be constant
PepeAiCeo.projectSellFee (contracts/Token.sol#494) should be constant
PepeAiCeo.reflectionBuyFee (contracts/Token.sol#503) should be constant
PepeAiCeo.reflectionSellFee (contracts/Token.sol#504) should be constant
PepeAiCeo.sellFeeDenominator (contracts/Token.sol#496) should be constant
PepeAiCeo.sellfeeburn (contracts/Token.sol#497) should be constant
PepeAiCeo.totalBuyFee (contracts/Token.sol#488) should be constant
PepeAiCeo.totalSellFee (contracts/Token.sol#495) should be constant
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-constant

DividendDistributor._token (contracts/Token.sol#280) should be immutable
DividendDistributor.router (contracts/Token.sol#290) should be immutable
PepeAiCeo.distributor (contracts/Token.sol#514) should be immutable
PepeAiCeo.launchedAt (contracts/Token.sol#512) should be immutable
PepeAiCeo.launchedAtTimestamp (contracts/Token.sol#513) should be immutable
PepeAiCeo.pair (contracts/Token.sol#509) should be immutable
PepeAiCeo.router (contracts/Token.sol#508) should be immutable
PepeAiCeo.ts_Project (contracts/Token.sol#510) should be immutable
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#state-variables-that-could-be-declared-immutable
```

Result => A static analysis of contract's source code has been performed using slither,

No major issues were found in the output

FUNCTIONAL TESTING

Router (PCS V2):

0xD99D1c33F9fC3444f8101754aBC46c52416550D1

All the functionalities have been tested, no issues were found

1- Adding liquidity (passed):

https://testnet.bscscan.com/tx/0xf4bead34d6a1a5332ec2aefc0a2002f4f05d97ec48e245be53eabfec8f4053c0

2- Buying when excluded from fees (0% tax) (passed):

https://testnet.bscscan.com/tx/0x53aa2ce7521c65ade64109cca4d9ef6e97d9e68bf957b9dd78963223158dbe94

3- Selling when excluded from fees (0% tax) (passed):

https://testnet.bscscan.com/tx/0xe2226e2b6f8e824f1df4eb15398daff1e351826f780fe33290e58d63887f5afd

4- Transferring when excluded from fees (0% tax) (passed):

https://testnet.bscscan.com/tx/0xb1b134387dd311d55d51d185c0a6a93b56dab4b0dec0ff68dc8582f9440afada

5- Buying when not excluded from fees (5% tax) (passed):

https://testnet.bscscan.com/tx/0x681968e9746c504523e3ed61cd3d3327f8126ba61e49a68daed9d6dd28900cca

6- Selling when not excluded from fees (5% tax) (passed):

https://testnet.bscscan.com/tx/0x149a068012cb50fc193359c0c562eed6440cef1f75d349fbb3c03f4201b664e1

FUNCTIONAL TESTING

7- Transferring when not excluded from fees (5% tax) (passed):

https://testnet.bscscan.com/tx/0x46a61f3ceabe43a46bf6f33356094d85dc0be6f8eddf004c76bea6bdf364605c

8- Internal swap (passed):

fee wallets received BNB

https://testnet.bscscan.com/address/0xbFD4527f574c755F94d1341b5010536355B464f7#internaltx

MANUAL TESTING

Logical – Setting swap threshold to 0 or too high

Severity: High

function: setSwapBackSettings

Status: Not Resolved

Overview:

If swapThreshold is set to 0 and there are 0 tokens in the contract, the sell/transfers would be failed for both owner of the contract and holders of the token (everyone). Additionaly if swapThreshold is set to a very high value, trade slippages would be increased significantly

```
function setSwapBackSettings(
    bool _enabled,
    uint256 _amount
) external devwall {
    swapEnabled = _enabled;
    swapThreshold = _amount;
```

Suggestion

To mitigate this issue make sure that swapThreshold is always greater than 1/1000000 and less than 1% of total supply.

MANUAL TESTING

Suggestions

- Change name of **savetokens** function to something that identifies its action, like "withdrawTokens"
- There are two functions that are doing exact same thing. One of this functions can be removed; **shouldTakeFee**, **shouldTakeFeer**
- Redundant function : **buyTokens**
  Event if burn and contract are not receiving any tokens (from tax) a Transfer event is still emitted, this may cause confusion for investors
- **emit Transfer(sender, address(this), feeamount2);**
- **emit Transfer(sender, DEAD, amounttoburn);**
- **Some features are disabled in the contract, like auto-liqudity – burns and rewards, having redundant code related to this features only increases gas usage with no purpose**
  Fees can not be changed, consider adding a function to be able to change fees within a safe range

Gas optimizations

- Define **router** variable as constant
- Define **pair** variable as constant
- Define **REWARD**, **WBNB**, **DEAD**, **ZERO** as constant variables
- Redundant code here:

```
_balances[Project] = ((_totalSupply * 100) / 100);
```

- Can be changed to

```
_balances[Project] = _totalSupply;
```

Redundant code at _transfer function

```
if (sender != pair && !isOwner(sender)) {}
```

- Redundant code at _transfer function, since emergBlock is always set to true

```
if (!authorizations[sender] && !authorizations[recipient]) {
        require(emergBlock, "Trading not open yet");
}
```

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