

# Smart Contract Security Audit V1

## Pandax Token

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# Background

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.

## Project Information

- **Platform:** Binance Smart Chain
- **Contract Address:** 0x1D9721dAF522cB931445386E7EA047B33e1563e4
- **Code Source:**  
<https://testnet.bscscan.com/address/0x1d9721daf522cb931445386e7ea047b33e1563e4#code>

## Token Information

- Name: PANDAX
- Total Supply: 100,000,000,000,000,000
- Holders: address
- Total transactions:

### Contracts address deployed to test net (BSC)

Pandax smart contract on testnet.bsc (BSC Test Net)

<https://testnet.bscscan.com/address/0x1d9721daf522cb931445386e7ea047b33e1563e4>

## Executive Summary

According to our assessment, the customer`s solidity smart contract is **Secured**.

|                |   |
|----------------|---|
| Well Secured   |   |
| <b>Secured</b> | ✓ |
| Poor Secured   |   |
| Insecure       |   |

Automated checks are with remix IDE. All issues were performed by the team, which included the analysis of code functionality, manual audit found during automated analysis were manually reviewed and applicable vulnerabilities are presented in the audit overview section. The general overview is presented in the Project Information section and all issues found are located in the audit overview section.

Team found 0 critical, 0 high, 0 medium, 3 low, 0 very low-level issues and 2 notes in all solidity files of the contract

The files:

Pandax.sol

# File and Function Level Report

## File in Scope:

| Contract Name | SHA<br>256<br>hash   | Contract Address                               |
|---------------|--|--|
| Pandax.sol    | 45626d857009ff6d619e901<br>daf24042d0585c471e51501<br>8af514bcb9518a2cf3 | 0x1D9721dAF522cB931445386E7EA047B33e<br>1563e4 |

- Contract: PANDAX
- Inherit: Context, IERC20, Ownable
- Observation: All passed including security check
- Test Report: passed
- Score: passed
- Conclusion: passed

| Function              | Test<br>Result | Type /<br>Return Type | Score         |
|-----------------------|----------------|-----------------------|---------------|
| name                  | ✓              | Read / public         | <b>Passed</b> |
| symbol                | ✓              | Read / public         | <b>Passed</b> |
| decimals              | ✓              | Read / public         | <b>Passed</b> |
| totalSupply           | ✓              | Read / public         | <b>Passed</b> |
| allowance             | ✓              | Read / public         | <b>Passed</b> |
| balanceOf             | ✓              | Read / public         | <b>Passed</b> |
| Owner                 | ✓              | Read / public         | <b>Passed</b> |
| uniswapV2Pair         | ✓              | Read / public         | <b>Passed</b> |
| swapAndLiquifyEnabled | ✓              | Read / public         | <b>Passed</b> |
| uniswapV2Router       | ✓              | Read / public         | <b>Passed</b> |
| reflectionFromToken   | ✓              | Read / public         | <b>Passed</b> |
| isExcludedFromReward  | ✓              | Read / public         | <b>Passed</b> |

|                          |   |                |               |
|--------------------------|---|----------------|---------------|
| tokenFromReflection      | ✓ | Read / public  | <b>Passed</b> |
| _maxTxAmount             | ✓ | Read / public  | <b>Passed</b> |
| _BurnFee                 | ✓ | Read / public  | <b>Passed</b> |
| isExcludedFromFees       | ✓ | Read / public  | <b>Passed</b> |
| _taxFee                  | ✓ | Read / public  | <b>Passed</b> |
| BurnWallet               | ✓ | Read / public  | <b>Passed</b> |
| totalFees                | ✓ | Read / public  | <b>Passed</b> |
| _GrowthWallet            | ✓ | Read / public  | <b>Passed</b> |
| geUnlockTime             | ✓ | Read / public  | <b>Passed</b> |
| _GrowthFee               | ✓ | Read / public  | <b>Passed</b> |
| _liquidityFee            | ✓ | Read / public  | <b>Passed</b> |
| approve                  | ✓ | Write / public | <b>Passed</b> |
| transferFrom             | ✓ | Write / public | <b>Passed</b> |
| transfer                 | ✓ | Write / public | <b>Passed</b> |
| deliver                  | ✓ | Write / public | <b>Passed</b> |
| excludeFromFees          | ✓ | Write / public | <b>Passed</b> |
| excludeFromReward        | ✓ | Write / public | <b>Passed</b> |
| includeInFee             | ✓ | Write / public | <b>Passed</b> |
| renounceOwnership        | ✓ | Write / public | <b>Passed</b> |
| transferOwnership        | ✓ | Write / public | <b>Passed</b> |
| includeInReward          | ✓ | Write / public | <b>Passed</b> |
| setMaxTxPercent          | ✓ | Write / public | <b>Passed</b> |
| decreaseAllowance        | ✓ | Write / public | <b>Passed</b> |
| setBurnFeePercent        | ✓ | Write / public | <b>Passed</b> |
| setGrowthFeePercent      | ✓ | Write / public | <b>Passed</b> |
| setTaxFeePercent         | ✓ | Write / public | <b>Passed</b> |
| setSwapAndLiquifyEnabled | ✓ | Write / public | <b>Passed</b> |
| increaseAllowance        | ✓ | Write / public | <b>Passed</b> |

|                        |   |                |               |
|------------------------|---|----------------|---------------|
| lock                   | ✓ | Write / public | <b>Passed</b> |
| unlock                 | ✓ | Write / public | <b>Passed</b> |
| setLiquidityFeePercent | ✓ | Write / public | <b>Passed</b> |
| setGrowthWallet        | ✓ | Write / public | <b>Passed</b> |

# Issues Checking Status

| No. | Issue Description   | Checking Status   |
|-----|---|-------------------|
| 1   | Compiler warnings.  | 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.   | Passed with notes |
| 10  | Methods execution permissions.  | Passed            |
| 11  | Economy model. If application logic is based on an incorrect economic model, the application would not function correctly and participants would incur financial losses.<br>This type of issue is most often found in bonus rewards systems, Staking and Farming contracts, Vault and Vesting contracts, etc. | 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            |



## Severity Definitions

| Risk Level | Description  |
|------------|--|
| Critical   | Critical vulnerabilities are usually straightforward to exploit and can lead to tokens loss etc.   |
| High       | High-level vulnerabilities are difficult to exploit; however, they also have significant impact on smart contract execution, e.g. public access to crucial functions |
| Medium     | Medium-level vulnerabilities are important to fix; however, they can't lead to tokens lose   |
| Low        | Low-level vulnerabilities are mostly related to outdated, unused etc. code snippets, that can't have significant impact on execution                                 |
| Note       | Lowest-level vulnerabilities, code style violations and info statements can't affect smart contract execution and can be ignored.                                    |

## Audit Findings

### Critical:

No critical severity vulnerabilities were found.

### High:

No High severity vulnerabilities were found

### Medium:

No Medium severity vulnerabilities were found.

### Low:

#### **#Use of block.timestamp for comparisons**

##### **Description**

The value of block.timestamp can be manipulated by the miner.  
And conditions with strict equality is difficult to achieve -  
block.timestamp

##### **Remediation**

Avoid use of block.timestamp

Status: [Acknowledged](#)

#### **#Owner privileges (In the period when the owner isn't renounced)**

##### **Description**

Owner can change Burn, liquidly, Growth, and Tax Fees.

Owner can include / exclude any address from Fees or Reward.

```
function excludeFromReward(address account) public onlyOwner() {
    require(account != 0x05fF2B0DB69458A0750badebc4f9e13aDd608C7F, 'We can not
exclude Pancake router.');
```

```
    require(!_isExcluded[account], "Account is already excluded");
    if(_rOwned[account] > 0) {
        _tOwned[account] = tokenFromReflection(_rOwned[account]);
    }
    _isExcluded[account] = true;
    _excluded.push(account);
}
```

```
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;
    }
}

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

function includeInFee(address account) public onlyOwner {
    _isExcludedFromFee[account] = false;
}

function setGrowthWallet(address newWallet) external onlyOwner() {
    GrowthWallet = newWallet;
}

function setLiquidityFeePercent(uint256 liquidityFee) external onlyOwner() {
    _liquidityFee = liquidityFee;
}

function setTaxFeePercent(uint256 taxFee) external onlyOwner() {
    _taxFee = taxFee;
}

function setBurnFeePercent(uint256 burnFee) external onlyOwner() {
    _BurnFee = burnFee;
}

function setGrowthFeePercent(uint256 GrowthFee) external onlyOwner() {
    _GrowthFee = GrowthFee;
}

function setMaxTxPercent(uint256 maxTxPercent) external onlyOwner() {
    _maxTxAmount = _tTotal.mul(maxTxPercent).div(
        10**2
    );
}

function setSwapAndLiquifyEnabled(bool _enabled) public onlyOwner {
    swapAndLiquifyEnabled = _enabled;
    emit SwapAndLiquifyEnabledUpdated(_enabled);
}
}

```

## Remediation

Make these functions internal in next version or the team should announce the investors before change the fees and give them time if they want to use the old fees.

P.S: This issue is common to the majority of rewards smart contracts.

Status: **Acknowledged.**

## #Pragm version not fixed

### Description

It is a good practice to lock the solidity version for a live deployment (use 0.8.6 instead of ^0.8.6). contracts should be deployed with the same compiler version and flags that they have been tested the most with. Locking the pragma helps ensure that contracts do not accidentally get deployed using, for example, the latest compiler which may have higher risks of undiscovered bugs. Contracts may also be deployed by others and the pragma indicates the compiler version intended by the original authors.

### Remediation

Remove the ^ sign to lock the pragma version

Status: **Closed**. Fixed in version2.

## Very Low:

No Very Low severity vulnerabilities were found.

### Notes:

## #Naming Conventions

### Description

The contract follows a consistent naming convention where we are private variables with leading "\_" and public variables without it. But we have missed to comply to the condition for certain variable names "\_\_Burnfee" which is public

### Remediation

Remove "\_" from external variable names and add it to private variable names

Status: **Acknowledged**

## # Constant calculations in the contract

### Description

recalculated initialization will save 2847 units of gas in deployment

```
uint256 private _tTotal = 10000000000000000 * 10**9;  
uint256 public _maxTxAmount = 10000000000000000 * 10**9;  
uint256 private numTokensSellToAddToLiquidity = 50000000 * 10**9;
```

### Recommendation

Replace the initialization as

```
uint256 private _tTotal = 10000000000000000000000000;  
uint256 public _maxTxAmount = 10000000000000000000000000;  
uint256 private numTokensSellToAddToLiquidity = 5000000000000000000000000;
```

Status: **Closed**. Fixed in version 2.

# Automatic Testing

## 1- Check for security

45626d857009ff6d619e901daf24042d0585c471e515018af514bcb9518a2cf3

File: PANDA... | Language: solidity | Size: 35441 bytes | Date: 2022-01-31T08:43:56.959Z

| Critical | High | Medium | Low | Note |
|----------|------|--------|-----|------|
| 0        | 0    | 0      | 0   | 0    |



## 2- SOLIDITY STATIC ANALYSIS

SOLIDITY STATIC ANALYSIS

☒ Select all ☒ Autorun Run

Security

☒ Select Security

- ☒ Transaction origin:  
'tx.origin' used
- ☒ Check-effects-interaction:  
Potential reentrancy bugs
- ☒ Inline assembly:  
Inline assembly used
- ☒ Block timestamp:  
Can be influenced by miners
- ☒ Low level calls:  
Should only be used by experienced devs
- ☒ Block hash:  
Can be influenced by miners
- ☒ Selfdestruct:  
Contracts using destructed contract can be broken

Gas & Economy

☒ Select Gas & Economy

- ☒ Gas costs:  
Too high gas requirement of functions
- ☒ This on local calls:  
Invocation of local functions via 'this'
- ☒ Delete dynamic array:  
Use require/assert to ensure complete deletion
- ☒ For loop over dynamic array:  
Iterations depend on dynamic array's size
- ☒ Ether transfer in loop:  
Transferring Ether in a for/while/do-while loop

SOLIDITY STATIC ANALYSIS

ERC

☒ Select ERC

- ☒ ERC20:  
'decimals' should be 'uint8'

Miscellaneous

☒ Select Miscellaneous

- ☒ Constant/View/Pure functions:  
Potentially constant/view/pure functions
- ☒ Similar variable names:  
Variable names are too similar
- ☒ No return:  
Function with 'returns' not returning
- ☒ Guard conditions:  
Ensure appropriate use of require/assert
- ☒ Result not used:  
The result of an operation not used
- ☒ String length:  
Bytes length != String length
- ☒ Delete from dynamic array:  
'delete' leaves a gap in array
- ☒ Data truncated:  
Division on int/uint values truncates the result

## 3- Inheritance graph

```
graph TD; PANDAX --> IERC20; PANDAX --> Ownable; SafeMath; Address; IUniswapV2Factory; IUniswapV2Pair; IUniswapV2Router02 --> IUniswapV2Router01; Ownable --> Context;
```

## 4- SOLIDITY UNIT TESTING

### SOLIDITY UNIT TESTING

Test your smart contract in Solidity.

Select directory to load and generate test files.

Test directory:

☒ Select all

☒ tests/PANDAX\_test.sol

Progress: 1 finished (of 1)

PASS

**testSuite (tests/PANDAX\_test.sol)**

✓ Before all

✓ Check success

✓ Check success2

✓ Check failure

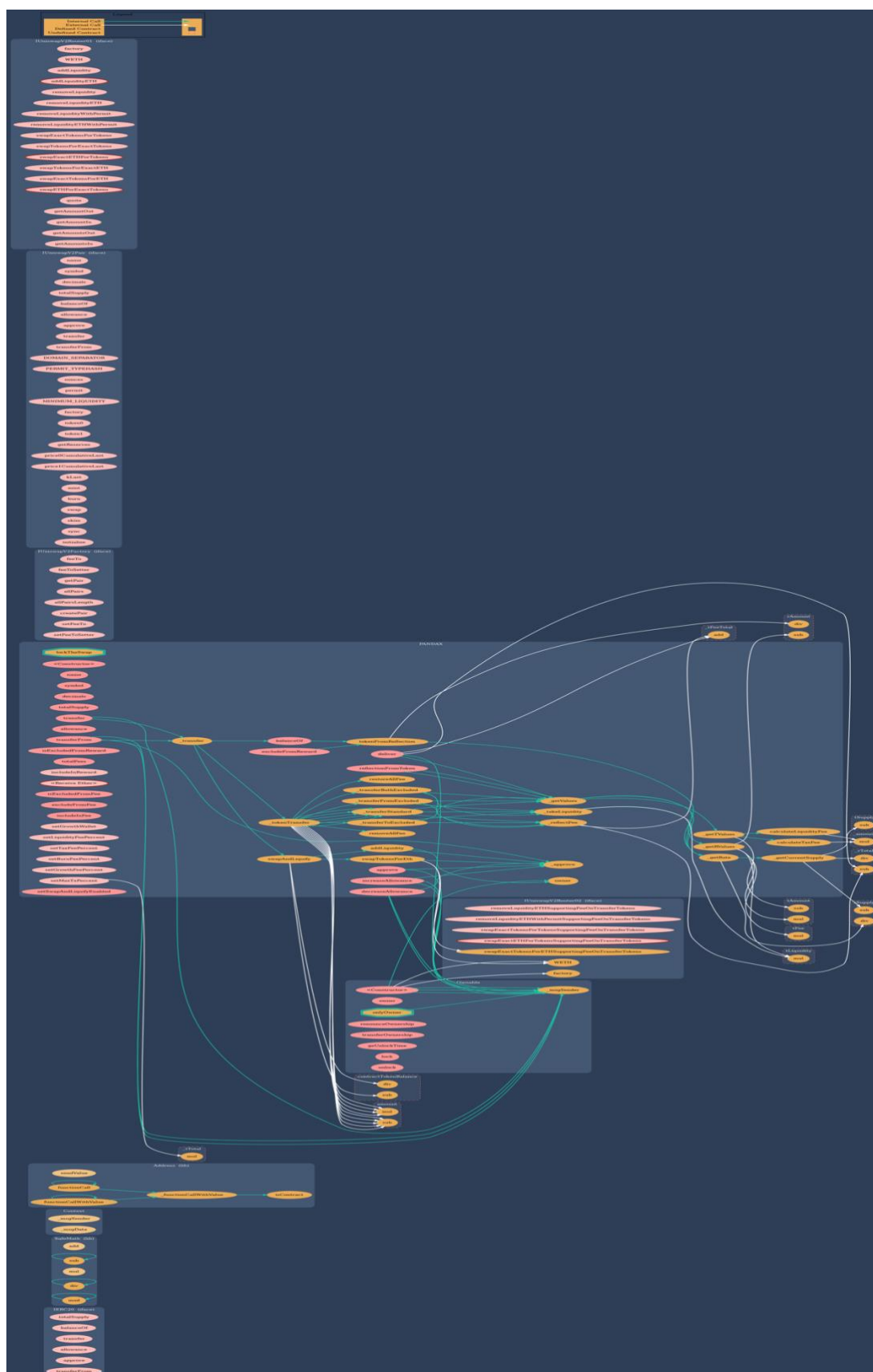
✓ Check sender and value

**Result for tests/PANDAX\_test.sol**

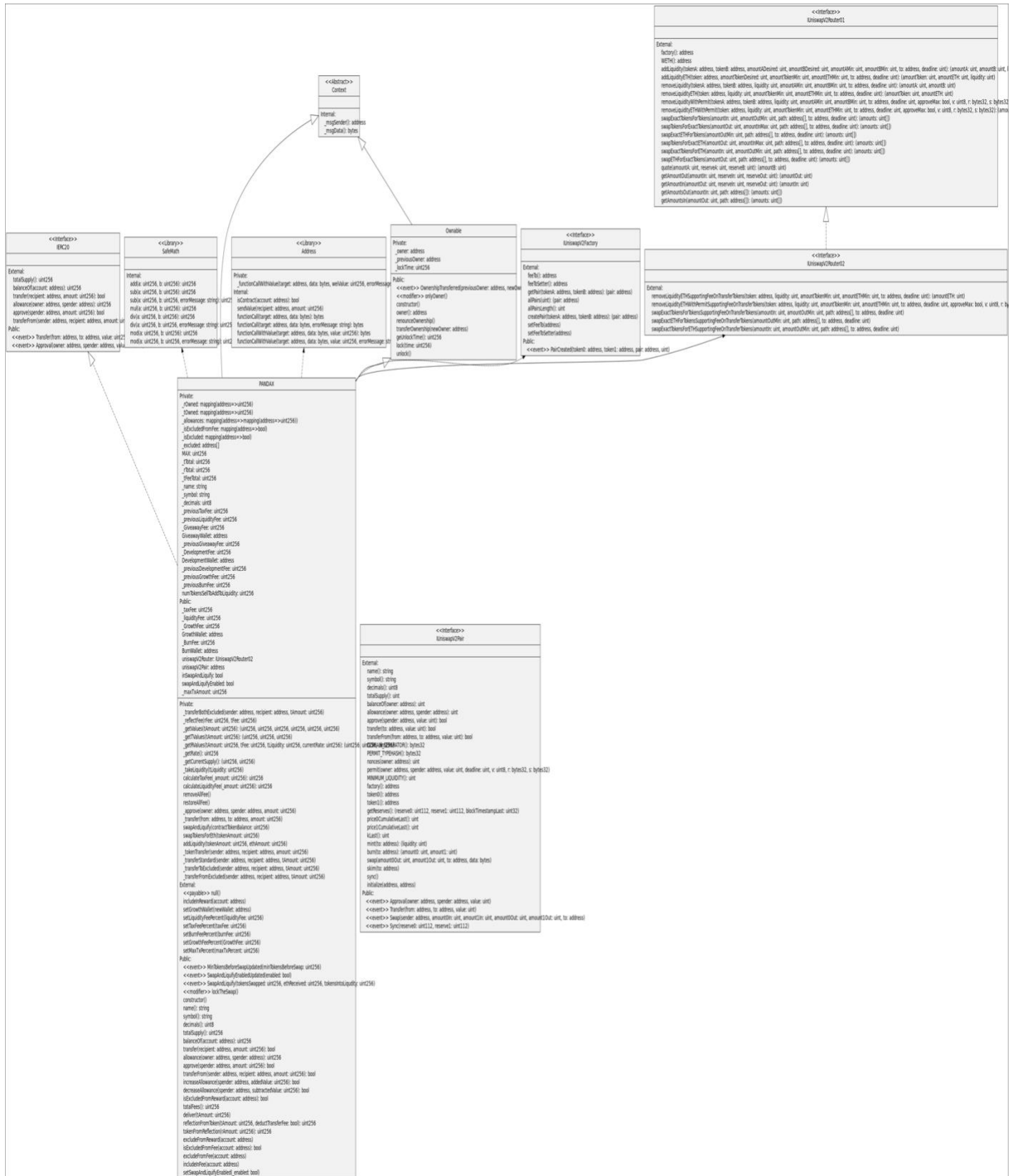
Passing: 5

Total time: 0.42s

## 5- Call graph



# Unified Modeling Language (UML)





## Functions signature

| Sighash  |    | Function Signature   |
|----------|----|--|
| =====    |    |  |
| 11902160 | => | _getTValues (uint256)  |
| 16279055 | => | isContract (address)   |
| 39509351 | => | increaseAllowance (address, uint256)                                 |
| 75128141 | => | calculateTaxFee (uint256)  |
| 18160ddd | => | totalSupply ()   |
| 70a08231 | => | balanceOf (address)  |
| a9059cbb | => | transfer (address, uint256)  |
| dd62ed3e | => | allowance (address, address)   |
| 095ea7b3 | => | approve (address, uint256)   |
| 23b872dd | => | transferFrom (address, address, uint256)                             |
| 771602f7 | => | add (uint256, uint256)   |
| b67d77c5 | => | sub (uint256, uint256)   |
| e31bdc0a | => | sub (uint256, uint256, string)                                       |
| c8a4ac9c | => | mul (uint256, uint256)   |
| a391c15b | => | div (uint256, uint256)   |
| b745d336 | => | div (uint256, uint256, string)                                       |
| f43f523a | => | mod (uint256, uint256)   |
| 71af23e8 | => | mod (uint256, uint256, string)                                       |
| 119df25f | => | _msgSender ()  |
| 8b49d47e | => | _msgData ()  |
| 24a084df | => | sendValue (address, uint256)   |
| a0b5ffb0 | => | functionCall (address, bytes)  |
| 241b5886 | => | functionCall (address, bytes, string)                                |
| 2a011594 | => | functionCallWithValue (address, bytes, uint256)                      |
| d525ab8a | => | functionCallWithValue (address, bytes, uint256, string)              |
| 36455e42 | => | _functionCallWithValue (address, bytes, uint256, string)             |
| 8da5cb5b | => | owner ()   |
| 715018a6 | => | renounceOwnership ()   |
| f2fde38b | => | transferOwnership (address)  |
| b6c52324 | => | geUnlockTime ()  |
| dd467064 | => | lock (uint256)   |
| a69df4b5 | => | unlock ()  |
| 017e7e58 | => | feeTo ()   |
| 094b7415 | => | feeToSetter ()   |
| e6a43905 | => | getPair (address, address)   |
| 1e3dd18b | => | allPairs (uint256)   |
| 574f2ba3 | => | allPairsLength ()  |
| c9c65396 | => | createPair (address, address)  |
| f46901ed | => | setFeeTo (address)   |
| a2e74af6 | => | setFeeToSetter (address)   |
| 06fdde03 | => | name ()  |
| 95d89b41 | => | symbol ()  |
| 313ce567 | => | decimals ()  |
| 3644e515 | => | DOMAIN_SEPARATOR ()  |
| 30adf81f | => | PERMIT_TYPEHASH ()   |
| 7ecebe00 | => | nonces (address)   |
| d505accf | => | permit (address, address, uint256, uint256, uint8, bytes32, bytes32) |
| ba9a7a56 | => | MINIMUM_LIQUIDITY ()   |
| c45a0155 | => | factory ()   |
| 0dfe1681 | => | token0 ()  |
| d21220a7 | => | token1 ()  |
| 0902f1ac | => | getReserves ()   |

```

5909c0d5 => price0CumulativeLast()
5a3d5493 => price1CumulativeLast()
7464fc3d => kLast()
6a627842 => mint(address)
89afcb44 => burn(address)
022c0d9f => swap(uint256,uint256,address,bytes)
bc25cf77 => skim(address)
fff6cae9 => sync()
485cc955 => initialize(address,address)
ad5c4648 => WETH()
e8e33700 =>
addLiquidity(address,address,uint256,uint256,uint256,uint256,address,uint256)
f305d719 => addLiquidityETH(address,uint256,uint256,uint256,address,uint256)
baa2abde =>
removeLiquidity(address,address,uint256,uint256,uint256,address,uint256)
02751cec => removeLiquidityETH(address,uint256,uint256,uint256,address,uint256)
2195995c =>
removeLiquidityWithPermit(address,address,uint256,uint256,uint256,address,uint256,bool,uint8,bytes32,bytes32)
ded9382a =>
removeLiquidityETHWithPermit(address,uint256,uint256,uint256,address,uint256,bool,uint8,bytes32,bytes32)
38ed1739 => swapExactTokensForTokens(uint256,uint256,address[],address,uint256)
8803dbee => swapTokensForExactTokens(uint256,uint256,address[],address,uint256)
7ff36ab5 => swapExactETHForTokens(uint256,address[],address,uint256)
4a25d94a => swapTokensForExactETH(uint256,uint256,address[],address,uint256)
18cbafe5 => swapExactTokensForETH(uint256,uint256,address[],address,uint256)
fb3bdb41 => swapETHForExactTokens(uint256,address[],address,uint256)
ad615dec => quote(uint256,uint256,uint256)
054d50d4 => getAmountOut(uint256,uint256,uint256)
85f8c259 => getAmountIn(uint256,uint256,uint256)
d06ca61f => getAmountsOut(uint256,address[])
1f00ca74 => getAmountsIn(uint256,address[])
af2979eb =>
removeLiquidityETHSupportingFeeOnTransferTokens(address,uint256,uint256,uint256,address,uint256)
5b0d5984 =>
removeLiquidityETHWithPermitSupportingFeeOnTransferTokens(address,uint256,uint256,uint256,address,uint256,bool,uint8,bytes32,bytes32)
5c11d795 =>
swapExactTokensForTokensSupportingFeeOnTransferTokens(uint256,uint256,address[],address,uint256)
b6f9de95 =>
swapExactETHForTokensSupportingFeeOnTransferTokens(uint256,address[],address,uint256)
791ac947 =>
swapExactTokensForETHSupportingFeeOnTransferTokens(uint256,uint256,address[],address,uint256)
a457c2d7 => decreaseAllowance(address,uint256)
88f82020 => isExcludedFromReward(address)
13114a9d => totalFees()
3bd5d173 => deliver(uint256)
4549b039 => reflectionFromToken(uint256,bool)
2d838119 => tokenFromReflection(uint256)
52390c02 => excludeFromReward(address)
3685d419 => includeInReward(address)
6ff6cdf4 => _transferBothExcluded(address,address,uint256)
184d894e => _reflectFee(uint256,uint256)
d4780e36 => _getValues(uint256)

```

```
1d5671e4 => _getRValues(uint256,uint256,uint256,uint256)
94e10784 => _getRate()
97a9d560 => _getCurrentSupply()
c432df5e => _takeLiquidity(uint256)
cc126a23 => calculateLiquidityFee(uint256)
301370af => removeAllFee()
e7e3e3a7 => restoreAllFee()
5342acb4 => isExcludedFromFee(address)
104e81ff => _approve(address,address,uint256)
30e0789e => _transfer(address,address,uint256)
173865ad => swapAndLiquify(uint256)
b28805f4 => swapTokensForEth(uint256)
9cd441da => addLiquidity(uint256,uint256)
f147aa74 => _tokenTransfer(address,address,uint256)
2852df65 => _transferStandard(address,address,uint256)
16f1cc83 => _transferToExcluded(address,address,uint256)
c7d9be66 => _transferFromExcluded(address,address,uint256)
437823ec => excludeFromFee(address)
ea2f0b37 => includeInFee(address)
00aed52b => setGrowthWallet(address)
8ee88c53 => setLiquidityFeePercent(uint256)
061c82d0 => setTaxFeePercent(uint256)
cea26958 => setBurnFeePercent(uint256)
43ee17d5 => setGrowthFeePercent(uint256)
d543dbeb => setMaxTxPercent(uint256)
c49b9a80 => setSwapAndLiquifyEnabled(bool)
```

## Automatic general report

## Files Description Table

```
| File Name | SHA-1 Hash |
|-----|-----|
| /Users/macbook/Desktop/smart contracts/PANDAX.sol |
dffb852ab3b30168dd77628cfbdc5f1de294896c |
```

## Contracts Description Table

```

Contract | Type | Bases |
:-----: | :-----: | :-----: | :-----: |
L |
**Function Name** | **Visibility** | **Mutability** |
**Modifiers** |
|||||
**IERC20** | Interface | |||
L | totalSupply | External | ! | NO! |
L | balanceOf | External | ! | NO! |
L | transfer | External | ! | NO! |
L | allowance | External | ! | NO! |
L | approve | External | ! | NO! |
L | transferFrom | External | ! | NO! |
|||||
**SafeMath** | Library | |||
L | add | Internal | ! | |
L | sub | Internal | ! | |
L | sub | Internal | ! | |
L | mul | Internal | ! | |
L | div | Internal | ! | |
L | div | Internal | ! | |
L | mod | Internal | ! | |
L | mod | Internal | ! | |
|||||
**Context** | Implementation | |||
L | _msgSender | Internal | ! | |
L | _msgData | Internal | ! | |
|||||
**Address** | Library | |||
L | isContract | Internal | ! | |
L | sendValue | Internal | ! | |
L | functionCall | Internal | ! | |
L | functionCall | Internal | ! | |
L | functionCallWithValue | Internal | ! | |
L | functionCallWithValue | Internal | ! | |
L | _functionCallWithValue | Private | ! | |
|||||
**Ownable** | Implementation | Context | |||
L | <Constructor> | Public | ! | NO! |
L | owner | Public | ! | NO! |
L | renounceOwnership | Public | ! | onlyOwner |
L | transferOwnership | Public | ! | onlyOwner |
L | qeUnlockTime | Public | ! | NO! |

```

```









| L | lock | Public ! |  | onlyOwner |
| L | unlock | Public ! |  | NO! |
| | | |
| **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 | approve | External ! |  | NO! |
| L | transfer | External ! |  | NO! |
| L | transferFrom | External ! |  | NO! |
| L | DOMAIN_SEPARATOR | External ! | NO! |
| L | PERMIT_TYPEHASH | External ! | NO! |
| L | nonces | External ! | NO! |
| L | permit | 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 | swap | External ! |  | NO! |
| L | skim | External ! |  | NO! |
| L | sync | External ! |  | NO! |
| L | initialize | External ! |  | NO! |
| | | |
| **IUniswapV2Router01** | Interface | | |
| L | factory | External ! | NO! |
| L | WETH | External ! | NO! |
| L | addLiquidity | External ! |  | NO! |
| L | addLiquidityETH | External ! |  | 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 ! |  | NO! |
| L | swapTokensForExactETH | External ! |  | NO! |
| L | swapExactTokensForETH | External ! |  | NO! |
| L | swapETHForExactTokens | External ! |  | NO! |
| L | quote | External ! | NO! |

```



```

| L | getAmountOut | External ! | NO ! |
| L | getAmountIn | External ! | NO ! |
| L | getAmountsOut | External ! | NO ! |
| L | getAmountsIn | External ! | NO ! |
| | | | |
| **IUniswapV2Router02** | Interface | IUniswapV2Router01 | | |
| L | removeLiquidityETHSupportingFeeOnTransferTokens | External ! | NO ! |
| L | removeLiquidityETHWithPermitSupportingFeeOnTransferTokens | External ! | NO ! |
| L | swapExactTokensForTokensSupportingFeeOnTransferTokens | External ! | NO ! |
| L | swapExactETHForTokensSupportingFeeOnTransferTokens | External ! | NO ! |
| L | swapExactTokensForETHSupportingFeeOnTransferTokens | External ! | NO ! |
| | | | |
| **PANDAX** | Implementation | Context, IERC20, Ownable | | |
| 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 | approve | Public ! | NO ! |
| L | transferFrom | Public ! | NO ! |
| L | increaseAllowance | Public ! | NO ! |
| L | decreaseAllowance | Public ! | NO ! |
| L | isExcludedFromReward | Public ! | NO ! |
| L | totalFees | Public ! | NO ! |
| L | deliver | Public ! | NO ! |
| L | reflectionFromToken | Public ! | NO ! |
| L | tokenFromReflection | Public ! | NO ! |
| L | excludeFromReward | Public ! | onlyOwner |
| L | includeInReward | External ! | onlyOwner |
| L | _transferBothExcluded | Private ! | NO ! |
| L | <Receive Ether> | External ! | NO ! |
| L | _reflectFee | Private ! | NO ! |
| L | _getValues | Private ! | |
| L | _getTValues | Private ! | |
| L | _getRValues | Private ! | |
| L | _getRate | Private ! | |
| L | _getCurrentSupply | Private ! | |
| L | _takeLiquidity | Private ! | |
| L | calculateTaxFee | Private ! | |
| L | calculateLiquidityFee | Private ! | |
| L | removeAllFee | Private ! | |
| L | restoreAllFee | Private ! | |
| L | isExcludedFromFee | Public ! | NO ! |
| L | _approve | Private ! | |
| L | _transfer | Private ! | |
| L | swapAndLiquify | Private ! | lockTheSwap |
| L | swapTokensForEth | Private ! | |
| L | addLiquidity | Private ! | |
| L | _tokenTransfer | Private ! | |
| L | _transferStandard | Private ! | |
| L | _transferToExcluded | Private ! | |
| L | _transferFromExcluded | Private ! | |
| L | excludeFromFee | Public ! | onlyOwner |

```

|  |   |  |                          |  |          |   |  |   |  |           |  |
|--|---|--|--------------------------|--|----------|---|--|---|--|-----------|--|
|  | L |  | includeInFee             |  | Public   | ! |  |  |  | onlyOwner |  |
|  | L |  | setGrowthWallet          |  | External | ! |  |  |  | onlyOwner |  |
|  | L |  | setLiquidityFeePercent   |  | External | ! |  |  |  | onlyOwner |  |
|  | L |  | setTaxFeePercent         |  | External | ! |  |  |  | onlyOwner |  |
|  | L |  | setBurnFeePercent        |  | External | ! |  |  |  | onlyOwner |  |
|  | L |  | setGrowthFeePercent      |  | External | ! |  |  |  | onlyOwner |  |
|  | L |  | setMaxTxPercent          |  | External | ! |  |  |  | onlyOwner |  |
|  | L |  | setSwapAndLiquifyEnabled |  | Public   | ! |  |  |  | onlyOwner |  |

### Legend

| Symbol  | Meaning                   |
|---|---------------------------|
| :-----:   | -----                     |
|  | Function can modify state |
|  | Function is payable       |

# Conclusion

The contracts are written systematically. Team found no critical issues. So, it is good to go for production.

Since possible test cases can be unlimited and developer level documentation (code flow diagram with function level description) not provided, for such an extensive smart contract protocol, we provide no such guarantee of future outcomes. We have used all the latest static tools and manual observations to cover maximum possible test cases to scan Everything.

Security state of the reviewed contract is “secured”.

- ✓ No mint function.
- ✓ No volatile code.
- ✓ Not many high severity issues were found.
- ✓ Contract Ownership Renounced.



# Disclaimer

This is a limited report on our findings based on our analysis, in accordance with good industry practice as of 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 the team on the basis of what it says or doesn't say, or how team produced it, and it is important for you to conduct your own independent investigations before making any decisions. team go into more detail on this in the below disclaimer below – please make sure to read it in full.

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