



Full Audit Report

Ajira Pay Finance Security Assessment



SECURI LAB contact@securi-lab.com



Table of Contents	1
Report Information	2
Disclaimer	3
Executive Summary	4
NVD CVSS Scoring	
Audit Result	
Project Introduction Scope Information Audit Information Audit Version History Initial Audit Scope	5
Security Assessment Procedure	7
Risk Rating	8
Vulnerability Severity Summary	9
Vulnerability Findings SWC & SEC-01 to SEC-06	10-20
SWC FIndings	21-23
Visibility, Mutability, Modifier function testing	24-32
Component, Exposed Function	
StateVariables, Capabilities, Contract Descripton Table	
Inheritate Function Relation Graph	33
UML Diagram	34
About Securi	35



Report Information

About Report Ajira Pay Finance Security Assessment

Version v1.2

Client Ajira Pay Finance

Language Solidity

Confidentiality Public

Contract Address 0xC55b03dC07EC7Bb8B891100E927E982540f0d181

Audit Method

Whitebox

Security

Assessment Author



Mark K. [Security Researcher | Redteam]

Kevin N. [Security Researcher | Web3 Dev]

Yusheng T. [Security Researcher | Incident Response]

Approve Document

Ronny C. CTO & Head of Security Researcher

Whitebox: Securi Team receives all source code from the client to provide the assessment. Securi Team receives only bytecode from the client to provide the assessment.

Digital Sign (Only Full Audit Report)

Page 2 of 35



^{*}Audit Method



Disclaimer

Regarding this security assessment, there are no guarantees about the security of the program instruction received from the client is hereinafter referred to as "Source code".

And **SECURI Lab** hereinafter referred to as "**Service Provider**", the **Service Provider** will not be held liable for any legal liability arising from errors in the security assessment. The responsibility will be the responsibility of the **Client**, hereinafter referred to as "**Service User**" and the **Service User** agrees not to be held liable to the **service provider** in any case. By contract **Service Provider** to conduct security assessments with integrity with professional ethics, and transparency to deliver security assessments to users The **Service Provider** has the right to postpone the delivery of the security assessment. If the security assessment is delayed whether caused by any reason and is not responsible for any delayed security assessments. If **the service provider** finds a vulnerability The **service provider** will notify the **service user** via the Preliminary Report, which will be kept confidential for security. The **service provider** disclaims responsibility in the event of any attacks occurring whether before conducting a

Security Assessment Not Financial/Investment Advice Any loss arising from any investment in any project is the responsibility of the investor.

security assessment. Or happened later All responsibility shall be sole with the service user.



The SECURI LAB team has conducted a comprehensive security assessment of the vulnerabilities. This assessment is tested with an expert assessment. Using the following test requirements

- 1. Smart Contract Testing with Expert Analysis By testing the most common and uncommon vulnerabilities.
- 2. Automated program testing It includes a sample vulnerability test and a sample of the potential vulnerabilities being used for the most frequent attacks.
- 3. Visibility, Mutability, Modifier function testing, such as whether a function can be seen in general, or whether a function can be changed and if so, who can change it.
- 4. Function association test It will be displayed through the association graph.
- 5. This safety assessment is cross-checked prior to the delivery of the assessment results.

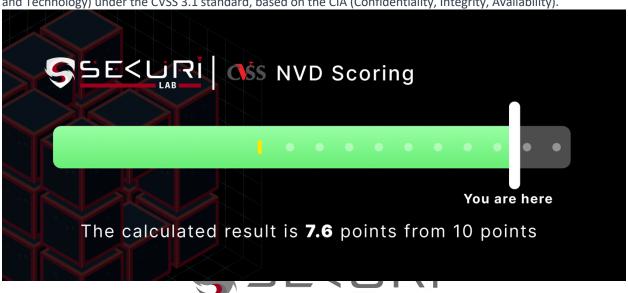


Executive Summary

For this security assessment, SECURI LAB received a request from Ajira Pay Finance on Saturday, February 25, 2023.

NVD CVSS Scoring

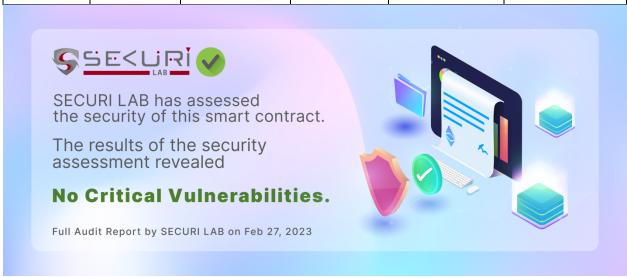
The score was calculated using the NVD (National Vulnerability Database) of NIST (National Institute of Standards and Technology) under the CVSS 3.1 standard, based on the CIA (Confidentiality, Integrity, Availability).



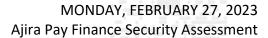
Audit Result

SECURI LAB evaluated the smart contract security of the project and found: [Total: 6]

Critical	High	Medium	Low	Very Low	Informational
0	1	1	0	0	4



Page 4 of 35





Project IntroductionScope Information:

Project Name	Ajira Pay Finance
Website	https://ajirapay.finance/
Chain	BNB Chain (Previously Binance Smart Chain)
Language	Solidity
Audit Information	

Audit Information:

Request Date	Saturday, February 25, 2023
Audit Date	Sunday, February 26, 2023
Re-assessment Date	-

Audit Version History:

Version	Date	Description
1.0	Monday, February 27, 2023	Preliminary Report
1.1	Monday, February 27, 2023	Full Audit Report
1.2	Monday, February 27, 2023	Update Project Name



FULL AUDIT REPORT

Initial Audit Scope:

Smart Contract

0xC55b03dC07EC7Bb8B891100E927E982540f0d181

Compiler Version

v0.8.4+commit.c7e474f2



Page 6 of 35



Security Assessment Procedure

Securi has the following procedures and regulations for conducting security assessments:

- **1.Request Audit** Client submits a form request through the Securi channel. After receiving the request, Securi will discuss a security assessment. And drafting a contract and agreeing to sign a contract together with the Client
- **2.Auditing** Securi performs security assessments of smart contracts obtained through automated analysis and expert manual audits.
- **3.Preliminary Report** At this stage, Securi will deliver an initial security assessment. To report on vulnerabilities and errors found under Audit Scope will not publish preliminary reports for safety.
- **4.Reassessment** After Securi has delivered the Preliminary Report to the Client, Securi will track the status of the vulnerability or error, which will be published to the Final Report at a later date with the following statuses:
 - **a.Acknowledge** The client has been informed about errors or vulnerabilities from the security assessment.
 - **b.Resolved** The client has resolved the error or vulnerability. Resolved is probably just a commit, and Securi is unable to verify that the resolved has been implemented or not.
 - **c.Decline** Client has rejected the results of the security assessment on the issue.

5.Final Report Securi providing full security assessment report and public





Risk Rating

Risk rating using this commonly defined: $Risk \ rating = impact * confidence$

Impact The severity and potential impact of an attacker attack

Confidence Ensuring that attackers expose and use this vulnerability

Both have a total of 3 levels: **High**, **Medium**, **Low**. By *Informational* will not be classified as a level

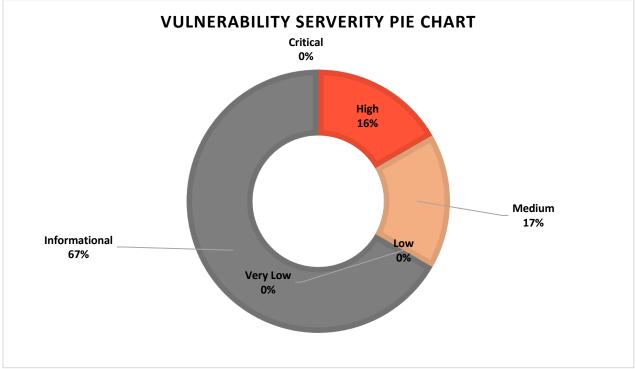
Confidence Impact [Likelihood]	Low	Medium	High
Low	Very Low	Low	Medium
Medium	Low	Medium	High
High	Medium	High	Critical

Severity is a risk assessment it is calculated from the Impact and Confidence values using the following calculation methods, Risk rating = impact * confidence It is categorized into 5 categories based on the lowest severity: Very Low, Low, Medium, High, Critical. For Informational will not be counted as severity



Vulnerability Severity Summary

Vulnerability Severity Level	Total
Critical	0
High	1
Medium	1
Low	0
Very Low	0
Informational (Non severity level)	4



Page 9 of 35



Vulnerability Findings

	ity i mamgs		
ID	Title	Severity	Status
SEC-01	Owner can change user balance by using burn function	High	Acknowledge
SEC-02	Imprecise arithmetic operations order (dividebefore-multiply)	Medium	Acknowledge
SEC-03	Unused state variables (unused-state)	Informational	Acknowledge
SEC-04	Comparison to boolean constant (boolean-equal)	Informational	Acknowledge
SEC-05	If different pragma directives are used (pragma)	Informational	Acknowledge
SEC-06	Conformity to Solidity naming conventions (naming-convention)	Informational	Acknowledge



SEC-01: Owner can change user balance by using burn function

Туре	Severity	Location	Status
Owner can change user balance by using burn function	High	Check on finding	Acknowledge

Finding:

(AjiraPayFinanceToken.sol#373-382)

Exploit Scenario:

The contract owner has the authority to modify the balance of tokens at other addresses, which may result in a loss of assets.

Alleviation:

Ajira Pay Finance team has Acknowledge this issue.





SEC-02: Imprecise arithmetic operations order (divide-before-multiply)

Туре	Severity	Location	Status
Imprecise arithmetic operations order (divide-before-multiply)	Medium	Check on finding	Acknowledge

Finding:

- X AjiraPayFinanceToken._swapAndLiquify(uint256) (AjiraPayFinanceToken.sol:432-459) performs a multiplication on the result of a division:
- buyBackTreasuryAmount = leftOverBnb / totalTreasury * buyBackTreasuryPercent (AjiraPayFinanceToken.sol#447)
- AjiraPayFinanceToken._swapAndLiquify(uint256) (AjiraPayFinanceToken.sol:432-459) performs a multiplication on the result of a division:
- liquidityTreasuryAmount = leftOverBnb / totalTreasury * liquidityTreasuryPercent (AjiraPayFinanceToken.sol#448)

Recommendation:

Consider ordering multiplication before division.

Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#divide-before-multiply



Exploit Scenario:

Solidity's integer division truncates. Thus, performing division before multiplication can lead to precision loss.

```
contract A {
    function f(uint n) public {
    coins = (oldSupply / n) * interest;
  }
}
```

If n is greater than oldSupply, coins will be zero. For example, with oldSupply = 5; n = 10, interest = 2, coins will be zero.

If (oldSupply * interest / n) was used, coins would have been 1.

In general, it's usually a good idea to re-arrange arithmetic to perform multiplication before division, unless the limit of a smaller type makes this dangerous.

Alleviation:

Ajira Pay Finance team has Acknowledge this issue.





SEC-03: Unused state variables (unused-state)

Туре	Severity	Location	Status
Unused state variables (unused- state)	Informational	Check on finding	Acknowledge

Finding:

AjiraPayFinanceToken._allowances (AjiraPayFinanceToken.sol:219) is never used in AjiraPayFinanceToken (AjiraPayFinanceToken.sol#199-538)

X AjiraPayFinanceToken.devTreasuryPercent (AjiraPayFinanceToken.sol:229) is never used in AjiraPayFinanceToken (AjiraPayFinanceToken.sol#199-538)

Recommendation:

Remove unused state variables.

Reference: https://github.com/grytic/slither/wiki/Detector-Documentation#unused-state-variable

Exploit Scenario:

_

Alleviation:

Ajira Pay Finance team has Acknowledge this issue.



SEC-04: Comparison to boolean constant (boolean-equal)

Туре	Severity	Location	Status
Comparison to boolean constant (boolean-equal)	Informational	Check on finding	Acknowledge

Finding:

X AjiraPayFinanceToken._transfer(address,address,uint256)

(AjiraPayFinanceToken.sol:387-419) compares to a boolean constant:

- •_isExcludedFromFee[_sender] == true (AjiraPayFinanceToken.sol#415)
- X AjiraPayFinanceToken._transfer(address,address,uint256)

(AjiraPayFinanceToken.sol:387-419) compares to a boolean constant:

•isInTaxHoliday == true (AjiraPayFinanceToken.sol#416)

Recommendation:

Remove the equality to the boolean constant.

Reference: https://github.com/cytic/slither/wiki/DetcetbADocumentation#boolean-equality



Exploit Scenario:

Detects the comparison to boolean constants.

Boolean constants can be used directly and do not need to be compare to true or false.

Alleviation:

Ajira Pay Finance team has Acknowledge this issue.





SEC-05: If different pragma directives are used (pragma)

Туре	Severity	Location	Status
If different pragma directives are used (pragma)	Informational	Check on finding	Acknowledge

Finding:

X Different versions of Solidity are used:

- Version used: ['=0.8.4', '^0.8.0', '^0.8.1']
- =0.8.4 (AjiraPayFinanceToken.sol:2)
- ^0.8.0 (@openzeppelin/contracts/access/AccessControl.sol#4)
- ^0.8.0 (@openzeppelin/contracts/access/IAccessControl.sol#4)
- ^0.8.0 (@openzeppelin/contracts/access/Ownable.sol#4)
- ^0.8.0 (@openzeppelin/contracts/security/ReentrancyGuard.sol#4)
- ^0.8.0 (@openzeppelin/contracts/token/ERC20/ERC20.sol#4)
- ^0.8.0 (@openzeppelin/contracts/token/ERC20/IERC20.sol#4)
- ^0.8.0 (@openzeppelin/contracts/token/ERC20/extensions/IERC20Metadata.sol#4)
- ^0.8.0 (@openzeppelin/contracts/token/ERC20/extensions/draft-IERC20Permit.sol#4)
- ^0.8.0 (@openzeppelin/contracts/token/ERC20/utils/SafeERC20.sol#4)
- ^0.8.0 (@openzeppelin/contracts/utils/Context.sol#4)
- ^0.8.0 (@openzeppelin/contracts/utils/Strings.sol#4)
- ^0.8.0 (@openzeppelin/contracts/utils/introspection/ERC165.sol#4)
- ^0.8.0 (@openzeppelin/contracts/utils/introspection/IERC165.sol#4)
- ^0.8.0 (@openzeppelin/contracts/utils/math/Math.sol#4)
- ^0.8.0 (@openzeppelin/contracts/utils/math/SignedMath.sol#4)
- ^0.8.0 (erc-payable-token/contracts/token/ERC1363/ERC1363.sol#3)
- ^0.8.0 (erc-payable-token/contracts/token/ERC1363/IERC1363.sol#3)
- ^0.8.0 (erc-payable-token/contracts/token/ERC1363/IERC1363Receiver.sol#3)
- ^0.8.0 (erc-payable-token/contracts/token/ERC1363/IERC1363Spender.sol#3)
- ^0.8.1 (@openzeppelin/contracts/utils/Address.sol#4)

Recommendation:

Use one Solidity version.

Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#different-pragma-directives-are-used

Page 17 of 35



Exploit Scenario:

_

Alleviation:

Ajira Pay Finance team has Acknowledge this issue.



Page 18 of 35



SEC-06: Conformity to Solidity naming conventions (naming-convention)

Туре	Severity	Location	Status
Conformity to Solidity naming conventions (naming-convention)	Informational	Check on finding	Acknowledge

Finding:

➤ Parameter AjiraPayFinanceToken.burn(address,uint256)._account (AjiraPayFinanceToken.sol:373) is not in mixedCase Finding:

X Parameter AjiraPayFinanceToken.burn(address,uint256)._amount (AjiraPayFinanceToken.sol:373) is not in mixedCase

X Parameter AjiraPayFinanceToken.setBuyBackEnabled(bool)._enabled (AjiraPayFinanceToken.sol:364) is not in mixedCase

X Variable AjiraPayFinanceToken.DEAD (AjiraPayFinanceToken.sol:209) is not in mixedCase

X Variable AjiraPayFinanceToken._isExcludedFromFee (AjiraPayFinanceToken.sol:217) is not in mixedCase

Recommendation:

Follow the Solidity [naming convention](https://solidity.readthedocs.io/en/v0.4.25/style-guide.html#naming-conventions).

Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#conformance-to-solidity-naming-conventions

Page 19 of 35



Exploit Scenario:

Solidity defines a <u>naming convention</u> that should be followed.

Rule exceptions

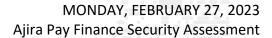
- Allow constant variable name/symbol/decimals to be lowercase (ERC20).
- Allow _ at the beginning of the mixed_case match for private variables and unused parameters.

Follow the Solidity naming convention.

Alleviation:

Ajira Pay Finance team has Acknowledge this issue.







SWC Findings

SWC Findin	<u>gs</u>		
ID	Title	Scanning	Result
SWC-100	Function Default Visibility	Complete	No risk
SWC-101	Integer Overflow and Underflow	Complete	No risk
SWC-102	Outdated Compiler Version	Complete	No risk
SWC-103	Floating Pragma	Complete	No risk
SWC-104	Unchecked Call Return Value	Complete	No risk
SWC-105	Unprotected Ether Withdrawal	Complete	No risk
SWC-106	Unprotected ELFDESTRUCT. Instruction	Complete	No risk
SWC-107	Reentrancy	Complete	No risk
SWC-108	State Variable Default Visibility	Complete	No risk
SWC-109	Uninitialized Storage Pointer	Complete	No risk
SWC-110	Assert Violation	Complete	No risk
SWC-111	Use of Deprecated Solidity Functions	Complete	No risk
SWC-112	Delegatecall to Untrusted Callee	Complete	No risk
SWC-113	DoS with Failed Call	Complete	No risk

Page 21 of 35



FULL AUDIT REPORT

	TOLE ADDIT KET		
SWC-114	Transaction Order Dependence	Complete	No risk
SWC-115	Authorization through tx.origin	Complete	No risk
SWC-116	Block values as a proxy for time	Complete	No risk
SWC-117	Signature Malleability	Complete	No risk
SWC-118	Incorrect Constructor Name	Complete	No risk
SWC-119	Shadowing State Variables	Complete	No risk
SWC-120	Weak Sources of Randomness from Chain Attributes	Complete	No risk
SWC-121	Missing Protection against Signature Replay Attacks	Complete	No risk
SWC-122	Lack of Proper Signature Verification	Complete	No risk
SWC-123	Requirement Violation	Complete	No risk
SWC-124	Write to Arbitrary Storage Location	Complete	No risk
SWC-125	Incorrect Inheritance Order	Complete	No risk
SWC-126	Insufficient Gas Griefing	Complete	No risk
SWC-127	Arbitrary Jump with Function Type Variable	Complete	No risk
SWC-128	DoS With Block Gas Limit	Complete	No risk

Page 22 of 35



FULL AUDIT REPORT

SWC-129	Typographical Error	Complete	No risk
SWC-130	Right-To-Left-Override control character (U+202E)	Complete	No risk
SWC-131	Presence of unused variables	Complete	No risk
SWC-132	Unexpected Ether balance	Complete	No risk
SWC-133	Hash Collisions With Multiple Variable Length Arguments	Complete	No risk
SWC-134	Message call with hardcoded gas amount	Complete	No risk
SWC-135	Code With No Effects	Complete	No risk
SWC-136	Unencrypted Private Data On-Chain	Complete	No risk



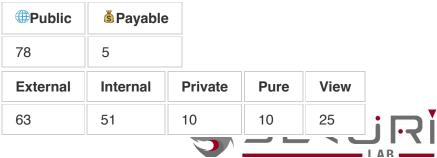
Visibility, Mutability, Modifier function testing

Components

Contracts	E Libraries	Interfaces	Abstract
1	0	4	0

Exposed Functions

This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.



StateVariables

Total	#Public
25	15

Capabilities

Solidity Versions observed	Experimental Features	Can Receive Funds	Uses Assembly	Has Destroyable Contracts
=0.8.4		yes		

Page 24 of 35



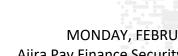
yes

MONDAY, FEBRUARY 27, 2023 Ajira Pay Finance Security Assessment

FULL AUDIT REPORT

Transfe rs ETH		DelegateCa	Uses Hash Functio ns	ECRecover	6 New/Create/Cre ate2
yes			yes		
TryCate	ch Σ Und	hecked			







FULL AUDIT REPORT

Contracts Description Table

Contract	Туре	Bases		
L	Function Name	Visibility	Muta bility	Modifie rs
IPancakeswap V2Factory	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!
IPancakeSwa pV2Pair	Interface			
L	name	External .		NO!
L	symbol	External !		NO!

Page 26 of 35



FULL AUDIT REPORT

Contract	Туре	Bases	
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!

Page 27 of 35



FULL AUDIT REPORT

Contract	Туре	Bases		
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!
IPancakeRout				
er01	Interface			
L	factory	External .		NO!
L	WETH	External		NO!

Page 28 of 35



FULL AUDIT REPORT

Contract	Туре	Bases		
L	addLiquidity	External !		NO!
L	addLiquidityETH	External !	Ü\$Ü	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 !	₫ <mark>\$</mark> ₫	NO!
L	quote	External !		NO!
L	getAmountOut	External !		NO!

Page 29 of 35



FULL AUDIT REPORT

Contract	Туре	Bases		
L	getAmountIn	External !		NO!
L	getAmountsOut	External !		NO!
L	getAmountsIn	External !		NO!
IPancakeRout er02	Interface	IPancakeR outer01		
L	removeLiquidityETHSupportingFeeOn TransferTokens	External !		NO!
L	removeLiquidityETHWithPermitSuppo rtingFeeOnTransferTokens	External !		NO!
L	swapExactTokensForTokensSupporti ngFeeOnTransferTokens	External !		NO!
L	swapExactETHForTokensSupportingF eeOnTransferTokens	External !	[\$]	NO!
L	swapExactTokensForETHSupportingF eeOnTransferTokens	External !		NO!
AjiraPayFinan ceToken	Implementation	Ownable, ERC1363, AccessCo ntrol, Reentranc yGuard		
L		Public !		ERC20
L	balanceOf	Public !		NO!
L	totalSupply	Public !		NO!
L	supportsInterface	Public !		NO!

Page 30 of 35



FULL AUDIT REPORT

Contract	Туре	Bases	
L	recoverBNB	Public !	onlyRol e nonRee ntrant
L	recoverLostTokensForInvestor	Public !	onlyRol e
L	updateTreasury	Public !	onlyRol e
L	updateRouterAddress	External !	onlyRol e
L	setDeductionFeePercentages	Public !	onlyRol e
L	setTreasuryPercentages	Public !	onlyRol e
L	setSwapAndLiquifyEnabled	External !	onlyRol e
L	excludeFromFee	Public !	onlyRol e
L	includeInFee	Public !	onlyRol e
L	setMaxTransactionAmount	External !	onlyRol e
L	setTaxHolidayEnabled	Public !	onlyRol e
L	setTransferFeeEnabled	Public !	onlyRol e
L	setBuyBackEnabled	Public !	onlyRol e
L	updateMinTokensToLiquify	Public !	onlyRol e

Page 31 of 35



FULL AUDIT REPORT

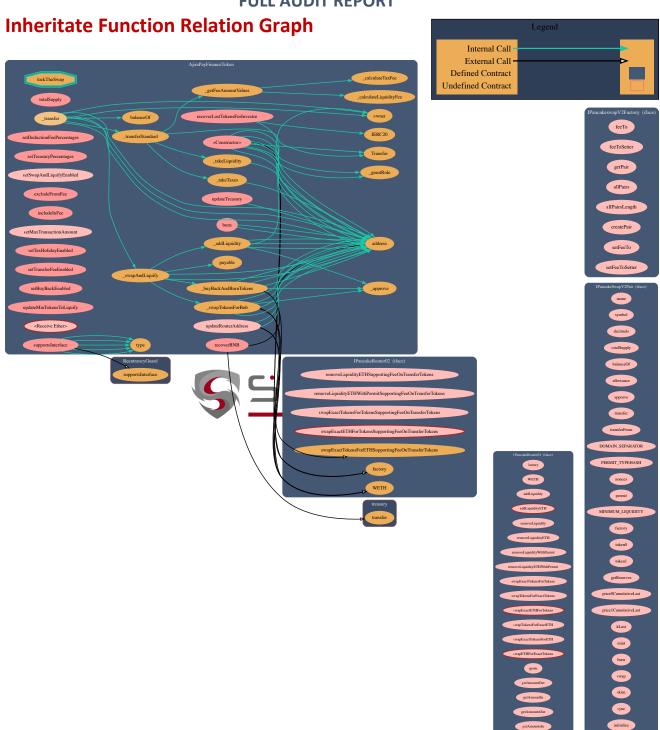
Contract	Туре	Bases		
				nonRee ntrant
L	burn	Public !		onlyRol e
L		External !	©s-	NO!
L	_transfer	Internal 🔒		
L	_transferStandard	Private 🔐		
L	_swapAndLiquify	Private 🔐		lockThe Swap
L	_swapTokensForBnb	Private 🔒		
L	_addLiquidity	Private 🔐		
L	_buyBackAndBurnTokens	Private 🔐		
L	_calculateLiquidityFee	Private 🔐		
L	_calculateTaxFee	Private 🔐		
L	_getFeeAmountValues	Private 🔐		
L	_takeLiquidity	Private 🔐		
L	_takeTaxes	Private 🔒		

Legend

Symbol	Meaning
	Function can modify state
	Function is payable

Page 32 of 35





Page 33 of 35



FULL AUDIT REPORT

UML Class Diagram



Page 34 of 35



About SECURI LAB

SECURI LAB is a group of cyber security experts providing cyber security consulting, smart contract security audits, and KYC services.



Follow Us On:

Website	https://securi-lab.com/
Twitter	https://twitter.com/SECURI_LAB
Telegram	https://t.me/securi_lab
Medium	https://medium.com/@securi