

FUTU Smart Contract Audit Report



19 Jan 2023



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AUDITED DETAILS

Audited Project

Project name	Token ticker	Blockchain	
FUTU	FUTU	BSC	

Addresses

Contract address	0x320953724bf0361fd0cDBf9eA9A23c7D4116FCb8	
Contract deployer address	0xB5eA2A87c2AB144993ce452716e935865e2B0eED	

Project Website

http://futu.com/

Codebase

https://bscscan.com/address/0x320953724bf0361fd0cDBf9eA9A23c7D4116FCb8#contracts





SUMMARY

One-stop crypto investment, social intelligence, state-of-the-art community-driven resource app with DeFi built tools for BNBChain.

Contract Summary

Documentation Quality

This project has a standard of documentation.

• Technical description provided.

Code Quality

The quality of the code in this project is up to standard.

• The official Solidity style guide is followed.

Test Scope

Project test coverage is 100% (Via Codebase).

Audit Findings Summary

Issues Found

- SWC-101 | Arithmetic operation issues discovered on lines 555, 578, 611, 613, 634, 635, 660, 662, 711, 885, 913, 939, 942, 950, 960, 961, 962, 968, 969, 970, 977, 982, 1023, 1027, 1032, and 1037.
- SWC-103 | A floating pragma is set on lines 10, 235, 320, 350, 377, and 762. It changed from ""^0.8.1"" to ""^0.8.0"".
- SWC-108 | State variable visibility is not set on lines 899 and 900. It is best practice to set the visibility of state variables explicitly to public or private.
- SWC-110 | Out of bounds array access issues discovered on lines 993 and 994.



CONCLUSION

We have audited the FUTU project which has released on January 2023 to discover issues and identify potential security vulnerabilities in FUTU Project. This process is used to find technical issues and security loopholes that find some common issues in the code.

The security audit report produced satisfactory results with low-risk issues.

The most common issue found in writing code on contracts that do not pose a big risk, writing on contracts is close to the standard of writing contracts in general. The low-level issues found are a floating pragma is set on some lines, state variable visibility is not set on some lines, and out of bounds array access which the index access expression can cause an exception in case of use of an invalid array index value.



AUDIT RESULT

Article	Category	Description	Result
Default Visibility	SWC-100 SWC-108	Functions and state variables visibility should be set explicitly. Visibility levels should be specified consciously.	ISSUE FOUND
Integer Overflow and Underflow	SWC-101	If unchecked math is used, all math operations should be safe from overflows and underflows.	ISSUE FOUND
Outdated Compiler Version	SWC-102	It is recommended to use a recent version of the Solidity compiler.	PASS
Floating Pragma	SWC-103	Contracts should be deployed with the same compiler version and flags that they have been tested thoroughly.	ISSUE Found
Unchecked Call Return Value	SWC-104	The return value of a message call should be checked.	PASS
SELFDESTRUCT Instruction	SWC-106	The contract should not be self-destructible while it has funds belonging to users.	PASS
Check-Effect Interaction	SWC-107	Check-Effect-Interaction pattern should be followed if the code performs ANY external call.	PASS
Assert Violation	SWC-110	Properly functioning code should never reach a failing assert statement.	ISSUE FOUND
Deprecated Solidity Functions	SWC-111	Deprecated built-in functions should never be used.	PASS
Delegate call to Untrusted Caller	SWC-112	Delegatecalls should only be allowed to trusted addresses.	PASS
DoS (Denial of Service)	SWC-113 SWC-128	Execution of the code should never be blocked by a specific contract state unless required.	PASS
Race Conditions	SWC-114	Race Conditions and Transactions Order Dependency should not be possible.	PASS



Authorization through tx.origin	SWC-115	tx.origin should not be used for authorization.	PASS
Block values as a proxy for time	SWC-116	Block numbers should not be used for time calculations.	PASS
Signature Unique Id	SWC-117 SWC-121 SWC-122	Signed messages should always have a unique id. A transaction hash should not be used as a unique id.	PASS
Shadowing State Variable	SWC-119	State variables should not be shadowed.	PASS
Weak Sources of Randomness	SWC-120	Random values should never be generated from Chain Attributes or be predictable.	
Incorrect Inheritance Order	SWC-125	When inheriting multiple contracts, especially if they have identical functions, a developer should carefully specify inheritance in the correct order. The rule of thumb is to inherit contracts from more /general/ to more /specific/.	PASS





SMART CONTRACT ANALYSIS

Started	Wed Jan 18 2023 22:37:20 GMT+0000 (Coordinated Universal Time)	
Finished	Thu Jan 19 2023 00:17:57 GMT+0000 (Coordinated Universal Time)	
Mode	Standard	
Main Source File	futu.sol	

Detected Issues

ID	Title	Severity	Status
SWC-101	ARITHMETIC OPERATION "+" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-=" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "/" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "/" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged

SYSFIXED

SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "/" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "-" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "/" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "*" DISCOVERED	low	acknowledged
SWC-101	ARITHMETIC OPERATION "+" DISCOVERED	low	acknowledged

SYSFIXED

SWC-101	ARITHMETIC OPERATION "+" DISCOVERED	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-103	A FLOATING PRAGMA IS SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-108	STATE VARIABLE VISIBILITY IS NOT SET.	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged
SWC-110	OUT OF BOUNDS ARRAY ACCESS	low	acknowledged



LINE 555

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
554 address owner = _msgSender();
555 _approve(owner, spender, allowance(owner, spender) + addedValue);
556 return true;
557 }
558
```



SWC-101 | ARITHMETIC OPERATION "-" DISCOVERED

LINE 578

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
577 unchecked {
578 _approve(owner, spender, currentAllowance - subtractedValue);
579 }
580 
581 return true;
```



LINE 611

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
610 unchecked {
611 _balances[from] = fromBalance - amount;
612 }
613 _balances[to] += amount;
614
```



LINE 613

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

Locations

612 }
613 _balances[to] += amount;
614
615 emit Transfer(from, to, amount);
616



LINE 634

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

Locations

633
634 _totalSupply += amount;
635 _balances[account] += amount;
636 emit Transfer(address(0), account, amount);
637



LINE 635

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

Locations

634 _totalSupply += amount; 635 _balances[account] += amount; 636 emit Transfer(address(0), account, amount); 637 638 _afterTokenTransfer(address(0), account, amount);



LINE 660

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
659 unchecked {
660 _balances[account] = accountBalance - amount;
661 }
662 _totalSupply -= amount;
663
```



LINE 662

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
661 }
662 _totalSupply -= amount;
663
664 emit Transfer(account, address(0), amount);
665
```



LINE 711

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
710 unchecked {
711 _approve(owner, spender, currentAllowance - amount);
712 }
713 }
714 }
```



LINE 885

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

Locations

884
885 uint256 public swapThreshold = 50_000 * 10e18;
886 uint256 public maxBuy;
887
888 address public marketingWallet;



LINE 913

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

Locations

912 constructor() ERC20("FUTU", "FUTU") {
913 __mint(msg.sender, 100000 * 10 ** decimals());
914 excludedFromFees[msg.sender] = true;
915
916 IRouter _router = IRouter(0x10ED43C718714eb63d5aA57B78B54704E256024E);



LINE 939

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
938
939 else if(recipient == pair) fee = amount * totalSellTax / 100;
940 else if(sender == pair){
941 require(amount <= maxBuy, "You are exceeding maxBuy");
942 fee = amount * totalBuyTax / 100;
```



LINE 942

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
941 require(amount <= maxBuy, "You are exceeding maxBuy");
942 fee = amount * totalBuyTax / 100;
943 }
944
945
```



LINE 950

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
949
950 super._transfer(sender, recipient, amount - fee);
951 if(fee > 0) super._transfer(sender, address(this) ,fee);
952
953 }
```



LINE 960

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

Locations

959 // Split the contract balance into halves 960 uint256 denominator = totalSellTax * 2; 961 uint256 tokensToAddLiquidityWith = contractBalance * sellTaxes.liquidity / denominator; 962 uint256 toSwap = contractBalance - tokensToAddLiquidityWith; 963



LINE 961

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
960 uint256 denominator = totalSellTax * 2;
961 uint256 tokensToAddLiquidityWith = contractBalance * sellTaxes.liquidity /
denominator;
962 uint256 toSwap = contractBalance - tokensToAddLiquidityWith;
963
964 uint256 initialBalance = address(this).balance;
```



LINE 962

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
961 uint256 tokensToAddLiquidityWith = contractBalance * sellTaxes.liquidity /
denominator;
962 uint256 toSwap = contractBalance - tokensToAddLiquidityWith;
963
964 uint256 initialBalance = address(this).balance;
965
```



LINE 968

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

Locations

967 968 uint256 deltaBalance = address(this).balance - initialBalance; 969 uint256 unitBalance= deltaBalance / (denominator - sellTaxes.liquidity); 970 uint256 bnbToAddLiquidityWith = unitBalance * sellTaxes.liquidity; 971



LINE 969

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
968 uint256 deltaBalance = address(this).balance - initialBalance;
969 uint256 unitBalance= deltaBalance / (denominator - sellTaxes.liquidity);
970 uint256 bnbToAddLiquidityWith = unitBalance * sellTaxes.liquidity;
971
972 if(bnbToAddLiquidityWith > 0){
```



LINE 970

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

Locations

969 uint256 unitBalance= deltaBalance / (denominator - sellTaxes.liquidity); 970 uint256 bnbToAddLiquidityWith = unitBalance * sellTaxes.liquidity; 971 972 if(bnbToAddLiquidityWith > 0){ 973 // Add liquidity to pancake



LINE 977

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
976
977 uint256 marketingAmt = unitBalance * 2 * sellTaxes.marketing;
978 if(marketingAmt > 0){
979 payable(marketingWallet).sendValue(marketingAmt);
980 }
```



LINE 982

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
981
982 uint256 devAmt = unitBalance * 2 * sellTaxes.dev;
983 if(devAmt > 0){
984 payable(devFunds).sendValue(devAmt);
985 }
```



LINE 1023

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
1022 function setSwapThreshold(uint256 new_amount) external onlyOwner {
1023 swapThreshold = new_amount * 10**decimals();
1024 }
1025
1026 function setMaxBuy(uint256 amount) external onlyOwner{
```



LINE 1027

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
1026 function setMaxBuy(uint256 amount) external onlyOwner{
1027 maxBuy = amount * 10**decimals();
1028 }
1029
1030 function setBuyTaxes(uint256 _marketing, uint256 _dev, uint256 _liquidity)
external onlyOwner{
```



LINE 1032

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
1031 buyTaxes = Taxes(_marketing, _dev, _liquidity);
1032 totalBuyTax = _marketing + _dev + _liquidity;
1033 }
1034
1035 function setSellTaxes(uint256 _marketing, uint256 _dev, uint256 _liquidity)
external onlyOwner{
```



LINE 1037

Iow SEVERITY

This plugin produces issues to support false positive discovery within Mythril.

Source File

- futu.sol

```
1036 sellTaxes = Taxes(_marketing, _dev, _liquidity);
1037 totalSellTax = _marketing + _dev + _liquidity;
1038 }
1039
1040
```





LINE 10

Iow SEVERITY

The current pragma Solidity directive is ""^0.8.1"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- futu.sol

Locations

9
10 pragma solidity ^0.8.1;
11
12 /**
13 * @dev Collection of functions related to the address type



LINE 235

Iow SEVERITY

The current pragma Solidity directive is ""^0.8.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- futu.sol

Locations

234
235 pragma solidity ^0.8.0;
236
237 /**
238 * @dev Interface of the ERC20 standard as defined in the EIP.



SWC-103 | A FLOATING PRAGMA IS SET.

LINE 320

Iow SEVERITY

The current pragma Solidity directive is ""^0.8.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- futu.sol

Locations

319
320 pragma solidity ^0.8.0;
321
322
323 /**



LINE 350

Iow SEVERITY

The current pragma Solidity directive is ""^0.8.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- futu.sol

Locations

349
350 pragma solidity ^0.8.0;
351
352 /**
353 * @dev Provides information about the current execution context, including the



LINE 377

Iow SEVERITY

The current pragma Solidity directive is ""^0.8.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- futu.sol

Locations

376
377 pragma solidity ^0.8.0;
378
379
380



LINE 762

Iow SEVERITY

The current pragma Solidity directive is ""^0.8.0"". It is recommended to specify a fixed compiler version to ensure that the bytecode produced does not vary between builds. This is especially important if you rely on bytecode-level verification of the code.

Source File

- futu.sol

Locations

761
762 pragma solidity ^0.8.0;
763
764
765 /**



SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 899

Iow SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "totalBuyTax" is internal. Other possible visibility settings are public and private.

Source File

- futu.sol

```
898 Taxes public sellTaxes = Taxes(1,1,1);

899 uint256 totalBuyTax = 3;

900 uint256 totalSellTax = 3;

901

902 mapping (address => bool) public excludedFromFees;
```



SWC-108 | STATE VARIABLE VISIBILITY IS NOT SET.

LINE 900

Iow SEVERITY

It is best practice to set the visibility of state variables explicitly. The default visibility for "totalSellTax" is internal. Other possible visibility settings are public and private.

Source File

- futu.sol

```
899 uint256 totalBuyTax = 3;
900 uint256 totalSellTax = 3;
901
902 mapping (address => bool) public excludedFromFees;
903
```



SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 993

Iow SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

Source File

- futu.sol

```
992 address[] memory path = new address[](2);
993 path[0] = address(this);
994 path[1] = router.WETH();
995
996 __approve(address(this), address(router), tokenAmount);
```



SWC-110 | OUT OF BOUNDS ARRAY ACCESS

LINE 994

Iow SEVERITY

The index access expression can cause an exception in case of use of invalid array index value.

Source File

- futu.sol

```
993 path[0] = address(this);
994 path[1] = router.WETH();
995
996 _approve(address(this), address(router), tokenAmount);
997
```



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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 us on the basis of what it says or doesn't say, or how we produced it, and it is important for you to conduct your own independent investigations before making any decisions. We go into more detail on this in the below disclaimer below – please make sure to read it in full.

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