



# Security Assessment TIDE EXCHANGE

Vital Block **Verified** on June 24<sup>h</sup>, 2023

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PREPARED FOR:  
TIDE EXCHANGE



## INTRODUCTION

Auditing Company	 <b>VITAL BLOCK SECURITY</b>
Client Project	 <b>TIDE EXCHANGE</b>
Methodology	Automated Analysis, Manual Code Review
Language	Solidity
License	MIT
Contract Address	<b>0x389F3026061A8FA1866628E30e4b9c284E118337</b>
Network	 <b>ARBITRUM CHAIN</b>
Optimization	<b>200 RUNS</b>
Token Type	ERC20
Website	<a href="https://www.tide.exchange">https://www.tide.exchange</a>
Telegram	<a href="https://t.me/daoxofficial">https://t.me/daoxofficial</a>
Twitter	<a href="https://twitter.com/tideexchange">https://twitter.com/tideexchange</a>
Doc	<a href="https://tideexchange.gitbook.io/tide/">https://tideexchange.gitbook.io/tide/</a>
Prelim Report Date	June 23 <sup>rd</sup> 2023
Final Report Date	June 24 <sup>th</sup> 2023



Verify the authenticity of this report on our GitHub Repo: <https://www.github.com/vital-block>

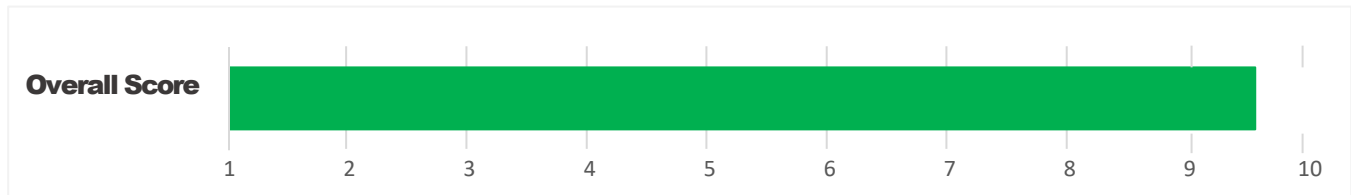


## EXECUTIVE SUMMARY

Vital Block has performed the automated and manual analysis of the TIDE EXCHANGE Sol code. The code was reviewed for common contract vulnerabilities and centralized exploits. Here's a quick audit summary:

Status	Critical ! 🔴	Major " 🟡	Medium # 🟡	Minor \$ 🟢	Unknown % 🟤
Open	0	0	0	2	0
Acknowledged	0	0	2	3	0
Resolved	0	0	1	0	0
Noteworthy OnlyOwner Privileges	Set Taxes and Ratios, Airdrop, Set Protection Settings, Set Reward Properties, Set Reflector Settings, Set Swap Settings, Set Pair and Router				

TIDE EXCHANGE Smart contract has achieved the following score: **95.0**



**Please note that smart contracts deployed on blockchains aren't resistant to exploits, vulnerabilities and/or hacks. Blockchain and cryptography assets utilize new and emerging technologies. These technologies present a high level of ongoing risks. For a detailed understanding of risk severity, source code vulnerability, and audit limitations, kindly review the audit report thoroughly.**

**Please note that centralization privileges regardless of their inherited risk status - constitute an elevated impact on smart contract safety and security.**



## SCOPE OF WORK

Vital Block was consulted by TIDE EXCHANGE to conduct the smart contract audit of its .Sol source code. The audit scope of work is strictly limited to mentioned .SOL file only:

- TIDE EXCHANGE.Sol

 External contracts and/or interfaces dependencies are not checked due to being out of scope.

Verify audited contract's contract address and deployed link below:

Public Contract.

0x389f3026061a8fa1866628e30e4b9c284e118337

Project Name	TDE EXCHANGE
Token Symbol	DAOX
Total Supply	1,000,000,000
Decimals	18
Blockchain	Arbitrum Network

## AUDIT METHODOLOGY

Smart contract audits are conducted using a set of standards and procedures. Mutual collaboration is essential to performing an effective smart contract audit. Here's a brief overview of Vital Block auditing process and methodology:

### CONNECT

- The onboarding team gathers source codes, and specifications to make sure we understand the size, and scope of the smart contract audit.

### AUDIT

- Automated analysis is performed to identify common contract vulnerabilities. We may use the following third-party frameworks and dependencies to perform the automated analysis:
  - Remix IDE Developer Tool
  - Open Zeppelin Code Analyzer
  - SWC Vulnerabilities Registry
  - DEX Dependencies, e.g., Pancakeswap, Uniswap
- Simulations are performed to identify centralized exploits causing contract and/or trade locks.
- A manual line-by-line analysis is performed to identify contract issues and centralized privileges.

We may inspect below mentioned common contract vulnerabilities, and centralized exploits:

Centralized Exploits	<ul style="list-style-type: none"><li>○ Token Supply Manipulation</li><li>○ Access Control and Authorization</li><li>○ Assets Manipulation</li><li>○ Ownership Control</li><li>○ Liquidity Access</li><li>○ Stop and Pause Trading</li><li>○ Ownable Library Verification</li></ul>
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### Common Contract Vulnerabilities

- Integer Overflow
- Lack of Arbitrary limits
- Incorrect Inheritance Order
- Typographical Errors
- Requirement Violation
- Gas Optimization
- Coding Style Violations
- Re-entrancy
- Third-Party Dependencies
- Potential Sandwich Attacks
- Irrelevant Codes
- Divide before multiply
- Conformance to Solidity Naming Guides
- Compiler Specific Warnings
- Language Specific Warnings

### REPORT

- The auditing team provides a preliminary report specifying all the checks which have been performed and the findings thereof.
- The client's development team reviews the report and makes amendments to the codes.
- The auditing team provides the final comprehensive report with open and unresolved issues.

### PUBLISH

- The client may use the audit report internally or disclose it publicly.






 It is important to note that there is no pass or fail in the audit, it is recommended to view the audit

as an unbiased assessment of the safety of solidity codes.



## RISK CATEGORIES

Smart contracts are generally designed to hold, approve, and transfer tokens. This makes them very tempting attack targets. A successful external attack may allow the external attacker to directly exploit. A successful centralization-related exploit may allow the privileged role to directly exploit. All risks which are identified in the audit report are categorized here for the reader to review:

Risk Type	Definition
<b>Critical</b> ! 	These risks could be exploited easily and can lead to asset loss, data loss, asset, or data manipulation. They should be fixed right away.
<b>Major</b> " 	These risks are hard to exploit but very important to fix, they carry an elevated risk of smart contract manipulation, which can lead to high-risk severity.
<b>Medium</b> # 	These risks should be fixed, as they carry an inherent risk of future exploits, and hacks which may or may not impact the smart contract execution. Low-risk re-entrancy-related vulnerabilities should be fixed to deter exploits.
<b>Minor</b> \$ 	These risks do not pose a considerable risk to the contract or those who interact with it. They are code-style violations and deviations from standard practices. They should be highlighted and fixed nonetheless.
<b>Unknown</b> % 	These risks pose uncertain severity to the contract or those who interact with it. They should be fixed immediately to mitigate the risk uncertainty.

All statuses which are identified in the audit report are categorized here for the reader to review:

Status Type	Definition
<b>Open</b>	Risks are open.
<b>Acknowledged</b>	Risks are acknowledged, but not fixed.
<b>Resolved</b>	Risks are acknowledged and fixed.



## CENTRALIZED PRIVILEGES

**Centralization risk is the most common cause of cryptography asset loss. When a smart contract has a privileged role, the risk related to centralization is elevated.**

**There are some well-intended reasons have privileged roles, such as:**

- **Privileged roles can be granted the power to `pause()` the contract in case of an external attack.**
- **Privileged roles can use functions like, `include()`, and `exclude()` to add or remove wallets from fees, swap checks, and transaction limits. This is useful to run a presale and to list on an exchange.**

**Authorizing privileged roles to externally-owned-account (EOA) is dangerous. Lately, centralization-related losses are increasing in frequency and magnitude.**

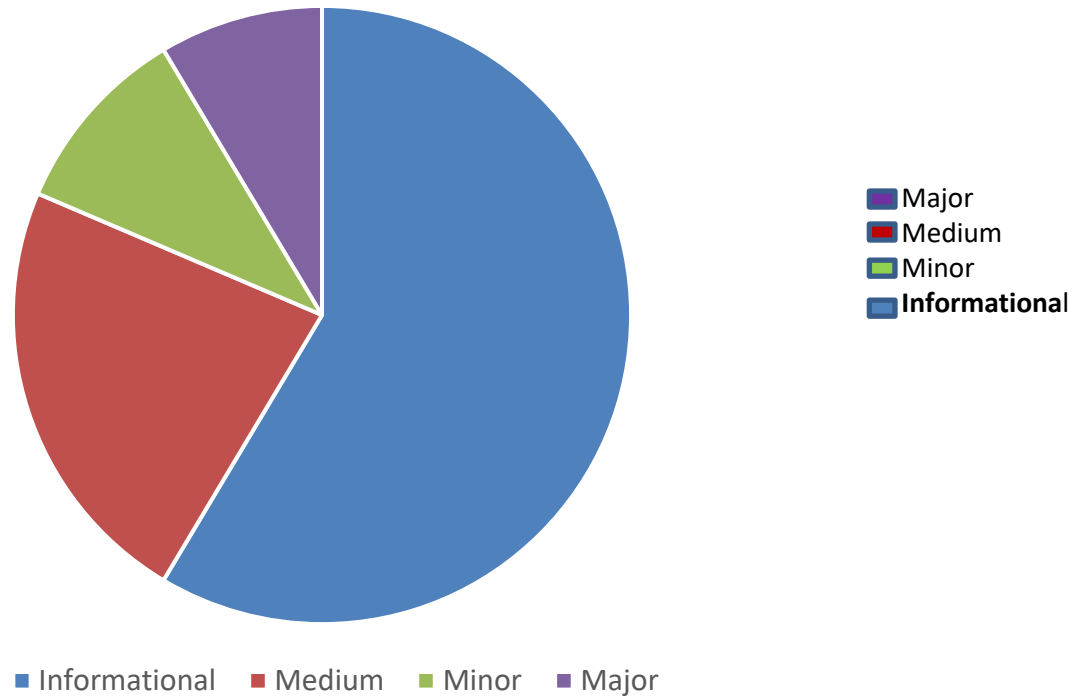
- **The client can lower centralization-related risks by implementing below mentioned practices:**
- **Privileged role's private key must be carefully secured to avoid any potential hack.**
- **Privileged role should be shared by multi-signature (multi-sig) wallets.**
- **Authorized privilege can be locked in a contract, user voting, or community DAO can be introduced to unlock the privilege.**
- **Renouncing the contract ownership, and privileged roles.**
- **Remove functions with elevated centralization risk.**

 **Understand the project's initial asset distribution. Assets in the liquidity pair should be locked. Assets outside the liquidity pair should be locked with a release schedule.**











## Finding Summary








## Status Icon Definitions

	Resolved		In Progress		Ignored (pro)
	Not Resolved		Incorrect		Ignored (con)

## Contract Ownership

**0x554524a07D55f614deFDe6cA9a2162823B50C6B9** Is The Owner Of The Contracts.

## Summary

-  Owner is not able to change or set taxes (0% tax)
-  Owner is not able to set a max amount for buys/sells/transfer
-  Owner is not able to pause trades
-  Owner is not able to mint new tokens
-  Owner is not able to blacklist an arbitrary address






## Issues Found

Vital Block Security found that the **TIDE EXCHANGE** contracts contain no critical issue, no major issues, and 1 minor issue, in addition to 3 informational notes.

We recommend all issues are amended, while the notes are up to the team's discretion, as it refers to best practices.



## AUTOMATED ANALYSIS

Symbol	Definition
	Function modifies state
	Function is payable
	Function is internal
	Function is private
	Function is important

```

**DAOX** | Interface | |||
| L | totalSupply | External | ! | NO |
| L | decimals | External | ! | NO |
| L | symbol | External | ! | NO |
| L | name | External | ! | NO |
| L | getOwner | External | | NO |
| L | balanceOf | External | ! | NO |
| L | transfer | External | " ! ! | NO |
| L | allowance | External | ! | NO |
| L | approve | External | " ! ! | NO |
| L | transferFrom | External | " | NO |
|||||
**IFactoryV2** | Interface | |||
| L | getPair | External | | NO |
| L | createPair | External | " | NO |
|||||
**IV2Pair** | Interface | |||
| L | factory | External | | NO |
| L | getReserves | External | | NO |
| L | sync | External | " | NO |

```



|||||

**\*\*IRouter01\*\*** | Interface | |||

| L | factory | External ¶ | |NO¶ |

| L | ETH | External ¶ | |NO¶ |

| L | addLiquidityETH | External ¶ | # |NO¶ |

| L | addLiquidity | External ¶ | " |NO¶ |

| L | swapExactAPTFForTokens | External ¶ | # |NO¶ |

| L | getAmountsOut | External ¶ | |NO¶ |

| L | getAmountsIn | External ¶ | |NO¶ |

|||||

**\*\*IRouter02\*\*** | Interface | IRouter01 |||

| L | swapExactTokensForETHSupportingFeeOnTransferTokens | External ¶ | " |NO¶ |

| L | swapExactETHForTokensSupportingFeeOnTransferTokens | External ¶ | # |NO¶ |

| L | swapExactTokensForTokensSupportingFeeOnTransferTokens | External ¶ | " ! 🚫 |NO¶ |

| L | swapExactTokensForTokens | External ¶ | " |NO¶ |

|||||

**\*\*Protections\*\*** | Interface | |||

| L | checkUser | External ¶ | " ! 🚫 |NO¶ |

| L | setLaunch | External ¶ | " |NO¶ |

| L | setLpPair | External ¶ | " |NO¶ |

| L | **DAOX** | External ¶ | " |NO¶ |

| L | removeSniper | External ¶ | " |NO¶ |

|||||

**\*\*Cashier\*\*** | Interface | |||

| L | setRewardsProperties | External ¶ | " |NO¶ |

| L | tally | External ¶ | " |NO¶ |

| L | load | External ¶ | # |NO¶ |

| L | cashout | External ¶ | " |NO¶ |

| L | giveMeWelfarePlease | External ¶ | " |NO¶ |

| L | getTotalDistributed | External ¶ | |NO¶ |

| L | getUserInfo | External ¶ | |NO¶ |

| L | getUserRealizedRewards | External ¶ | |NO¶ |



```

| L | getPendingRewards | External | | | NO |
| L | initialize | External | | " | NO |
| L | getCurrentReward | External | | | NO |
|||||
| **SOL** | Implementation | SafeMath | |||
| L | <Constructor> | Public | | # | NO |
| L | transferOwner | External | | " | onlyOwner |
| L | renounceOwnership | External | | " | NO |
| L | setOperator | Public | | " | NO |
| L | renounceOriginalDeployer | External | | " | NO |
| L | <Receive Ether> | External | | # | NO |
| L | totalSupply | External | | | NO |
| L | decimals | External | | | NO |
| L | symbol | External | | | NO |
| L | name | External | | | NO |
| L | getOwner | External | | ! | NO |
| L | balanceOf | Public | | ! | NO |
| L | allowance | External | | ! | NO |
| L | approve | External | | " ! | NO |
| L | _approve | Internal | $ | " | |
| L | approveContractContingency | Public | | " ! | onlyOwner |
| L | transfer | External | | " | NO |
| L | transferFrom | External | | " | NO |
| L | setNewRouter | External | | " | onlyOwner |
| L | setLpPair | External | | " | onlyOwner |
| L | setInitializers | External | | " | onlyOwner |
| L | isExcludedFromFees | External | | | NO |
| L | isExcludedFromDividends | External | | | NO |
| L | isExcludedFromProtection | External | | | NO |
| L | setDividendExcluded | Public | | " | onlyOwner |
| L | setExcludedFromFees | Public | | " | onlyOwner |

```



## Vulnerability Run check

### Tide Exchange / DAOX

24/06/2023 04:28 AM UTC+8

#### Contract Info

Total supply 1000000000  
Transaction Tax Buy 0.00% / Sell 0.00%

#### Risk Analysis

...

This token contract has not been verified. We cannot check the contract code for details. Unsourced token contracts are likely to have malicious functions to defraud users of their assets.

##### ✔ No mint function

Mint function is transparent or non-existent. Hidden mint functions may increase the amount of tokens in circulation and effect the price of the token.

##### ✔ Owner cant change balance

The contract owner does not have the authority to modify the balance of tokens at other addresses.

#### Honeypot Risk

##### 🚫 Non Found

##### ✔ No Anti Whale

There is no limit to the number of token transactions. The number of scam token transactions may be limited (honeypot risk).

##### ✔ No whitelist function

Whitelist function found

##### ✔ No Proxy

There is no proxy in the contract. The proxy contract means contract owner can modify the function of the token and possibly effect the price.

##### ✔ No function to retrieve ownership

If this function exists, it is possible for the project owner to regain ownership even after relinquishing it.

##### ✔ No trading cooldown

The token contract has no trading cooldown function. If there is a trading cooldown function, the user will not be able to sell the token within a certain time or block after buying.

##### ✔ No blacklist function

No blacklist function is included.

#### Holders

Holder count 1  
0x55...c6b9 1000000000.00 (100.00%)

#### Creator OWNERSHIP NOT RENOUNCED

0x55...c6b9 1000000000.00 (100.00%)

#### Owner

... 0.00 (0.00%)

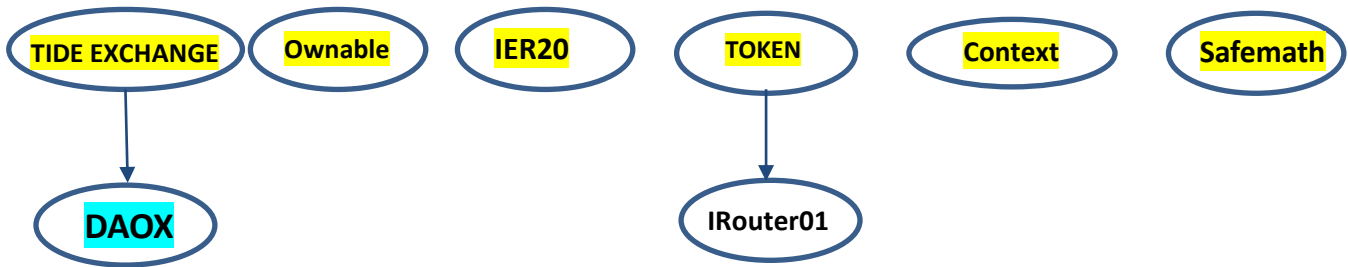
#### Liquidity Pool



##### ✔ No whitelist function

Whitelist function found

## INHERITANCE GRAPH



Identifier	Definition	Severity
CEN-12	Centralization privileges of TIDE EXCHANGE	Medium # 🟡

Vulnerability 0 : No important security issue detected.

Threat level: Low

```

1289 event SetTrustedRemoteAddress(uint16 _remoteChainId, bytes _remoteAddress);
1290 event SetMinDstGas(uint16 _dstChainId, uint16 _type, uint _minDstGas);
1291
1292 constructor(address _endpoint) {
1293     lzEndpoint = ILayerZeroEndpoint(_endpoint);
1294 }
1295
1296 function lzReceive(uint16 _srcChainId, bytes calldata _srcAddress, uint64 _nonce, bytes calldata _payload) public virtual override {
1297     // lzReceive must be called by the endpoint for security
1298     require(_msgSender() == address(lzEndpoint), "LzApp: invalid endpoint caller");
1299
1300     bytes memory trustedRemote = trustedRemoteLookup[_srcChainId];
1301     // if will still block the message pathway from (srcChainId, srcAddress). should not receive message from untrusted remote.
1302     require(_srcAddress.length == trustedRemote.length && trustedRemote.length > 0 && keccak256(_srcAddress) == keccak256(trustedRemote), "LzApp: invalid src address");
1303
1304     _blockingLzReceive(_srcChainId, _srcAddress, _nonce, _payload);
1305 }
1306
1307 // abstract function - the default behaviour of LayerZero is blocking. See: NonblockingLzApp if you dont need to enforce ordered mess
1308 function _blockingLzReceive(uint16 _srcChainId, bytes memory _srcAddress, uint64 _nonce, bytes memory _payload) internal virtual;
1309
1310 function _lzSend(uint16 _dstChainId, bytes memory _payload, address payable _refundAddress, address _zroPaymentAddress, bytes memory
1311     bytes memory trustedRemote = trustedRemoteLookup[_dstChainId];
1312     require(trustedRemote.length != 0, "LzApp: destination chain is not a trusted source");
1313     lzEndpoint.send{value: _nativeFee}(_dstChainId, trustedRemote, _payload, _refundAddress, _zroPaymentAddress, _adapterParams);
1314 }
1315
  
```

## TZT-02 POSSIBLE OVERFLOW

Category	Severity ●	Location	Status
Status Mathematical Operations	Minor	contracts/code/TIDEEXCHANGESol	Acknowledged

### Description

In `updateForMinter`, the following equation is used inside an unchecked block

```
contract DAOX is OFTCore, ERC20, IOFT {

    //1000000000*1e18;
    string constant daox_name = "Tide Exchange";
    string constant daox_symbol = "DAOX";

    constructor(address _lzEndpoint,uint daox_supply) ERC20(daox_name, daox_symbol)
    OFTCore(_lzEndpoint) {
        if(daox_supply>0)
        {
            _mint(_msgSender(), daox_supply);
        }
    }
}
```

Minter can not issue more **DAOX** tokens indefinitely.

Note that as of the date of publishing, the above review reflects the current understanding of known security patterns as they relate to the **DAOX** contract.

### Recommendation

We recommend either checking for overflow in this case, or ensuring that the `PairsIn` is close enough it will never cause an overflow.



## TTV-03 POSSIBLE OVERFLOW

Category	Severity ●	Location	Status
Mathematical Operations	Minor	Contract/TIDEEXCHANGE.SOL	INFORMATIONAL

### Description

State variables can be declared as constant using the constant keyword. This means that the value of the state variable cannot be changed after it has been set. Additionally, the constant variables decrease gas consumption of the corresponding transaction.

```
contract ERC20 is Context, IERC20, IERC20Metadata {
    mapping(address => uint256) private _balances;

    mapping(address => mapping(address => uint256)) private _allowances;

    uint256 private _totalSupply;

    string private _name;
    string private _symbol;
```

### Recommendation

Constant state variables can be useful when the contract wants to ensure that the value of a state variable cannot be changed by any function in the contract. This can be useful for storing values that are important to the contract's behavior, such as the contract's address or the maximum number of times a certain function can be called. The team is advised to add the constant keyword to state variables that never change.

## Vulnerability Scan

### REENTRANCY

Severity

Major

Confidence Parameter

Certain

## Vulnerability Description

**NOTE:** In a re-entrance attack, a malicious contract calls back into the calling contract before the first invocation of the function is finished. This may cause the different invocations of the function to interact in undesirable ways, especially in cases where the function is updating state variables after the external calls.

## Scanning Line:

```
function _transfer(address from, address to, uint256 amount)
internal virtual {
    require(from != address(0), "ERC20: transfer from the
zero address");
    require(to != address(0), "ERC20: transfer to the zero
address");

    _beforeTokenTransfer(from, to, amount);

    uint256 fromBalance = _balances[from];
    require(fromBalance >= amount, "ERC20: transfer amount
exceeds balance");
    unchecked {
        _balances[from] = fromBalance - amount;
        // Overflow not possible: the sum of all balances
is capped by totalSupply, and the sum is preserved by
        // decrementing then incrementing.
        _balances[to] += amount;
    }

    emit Transfer(from, to, amount);

    _afterTokenTransfer(from, to, amount);
}
```

## General Detectors



### Incorrect Solidity Version

This contract uses an unconventional or very old version of Solidity.



Attention  
Required



### Public Functions Should be Declared External

Some functions in this contract should be declared as external in order to save gas.



Attention  
Required



### State Variables Should be Declared Constant

Some state variables in this contract should be declared as constant








Attention  
Required

- |   |  |
|---|--|
| ✓ No vulnerable withdrawal functions found                  | ✓ No dumping risks found                       |
| ✓ No reentrancy risk found                                  | ✓ No compiler version inconsistencies found    |
| ✓ No locks detected   | ✓ No unchecked call responses found            |
| ✓ Verified source code found                                | ✓ No vulnerable self-destruct functions found  |
| ✓ No mintable risks found                                   | ✓ No assertion vulnerabilities found           |
| ✓ Users can always transfer their tokens                    | ✓ No old solidity code found                   |
| ✓ Contract cannot be upgraded                               | ✓ No external delegated calls found            |
| ✓ Wallets cannot be blacklisted from transferring the token | ✓ No external call dependency found            |
| ✓ No transfer fees found                                    | ✓ No vulnerable authentication calls found     |
| ✓ Token can be sold through regular AMMs                    | ✓ No invalid character typos found             |
| ✓ No transfer limits found                                  | ✓ No RTL characters found                      |
| ✓ No ERC20 approval vulnerability found                     | ✓ No dead code found                           |
| ✓ Contract owner cannot abuse ERC20 approvals               | ✓ No risky data allocation found               |
| ✓ No ERC20 interface errors found                           | ✓ No uninitialized state variables found       |
| ✓ No blocking loops found                                   | ✓ No uninitialized storage variables found     |
| ✓ No centralized balance controls found                     | ✓ No vulnerable initialization functions found |
| ✓ No transfer cooldown times found                          | ✓ No risky data handling found                 |
| ✓ No approval restrictions found                            | ✓ No number accuracy bug found                 |
| ✓ No external calls detected                                | ✓ No out-of-range number vulnerability found   |



## OPTIMIZATIONS | TIDE EXCHANGE

ID	Title	Category	Status
GZT- 007	Logarithm Refinement Optimization	Gas Optimization	Acknowledged 
GZT- 323	Checks Can Be Performed Earlier	Gas Optimization	Acknowledged 
GZT- 679	Unnecessary Use Of SafeMath	Gas Optimization	Acknowledged 
GZT- 122	Struct Optimization	Gas Optimization	Acknowledged 
GZT-067	Unused State Variable	Gas Optimization	Acknowledged 

## MANUAL REVIEW

**TIDE EXCHANGE:** The TideX Leveraged Trading Protocol is a decentralized platform for synthetic leveraged trading that offers features such as zero impact on the price of trades, leverage of up to 150x, self-custody options, and aggregated liquidity.

**Token:** TIDE EXCHANGE

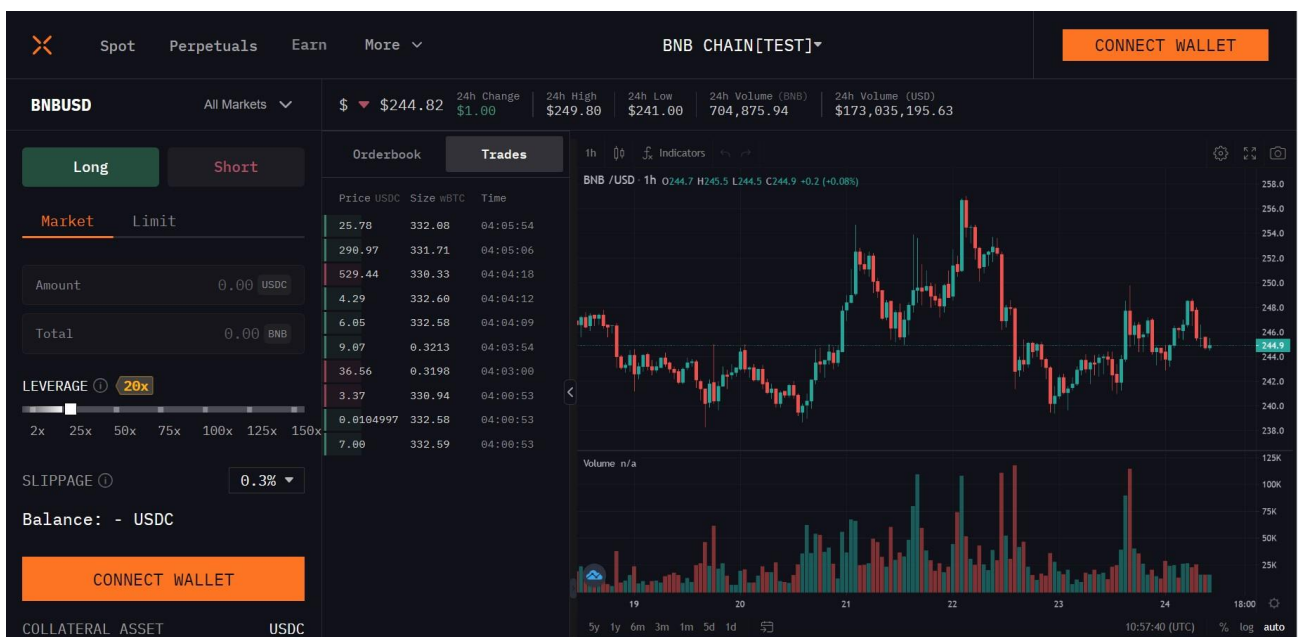
**Ticker:** DAOX

**Decimals:** 18

**Chain/Standard:** Arbitrum Network



### Outstanding Features of TIDE EXCHANGE Is Launching On Arbitrum Network





# ISSUES CHECKING STATUS

Issue Description

Checking Status

1.	Compiler errors.	PASSED
2.	Race Conditions and reentrancy. Cross-Function Race Conditions.	PASSED
3.	Possible Delay In Data Delivery.	PASSED
4.	Oracle calls.	PASSED
5.	Front Running.	PASSED
6.	Sol Dependency.	PASSED
7.	Integer Overflow And Underflow.	PASSED
8.	DoS with Revert.	PASSED
9.	Dos With Block Gas Limit.	PASSED
10.	Methods execution permissions.	PASSED
11.	Economy Model of the contract.	PASSED
12.	The Impact Of Exchange Rate On the solidity Logic.	PASSED
13.	Private use 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
19.	Cross-Function race Conditions	PASSED
20.	Save Upon solidity contract Implementation and Usage.	PASSED
21.	Fallback Function Security	PASSED



**AUDIT RESULT**

**PASSED**

SMART CONTRACT AUDIT OF TIDE EXCHANGE

Identifier	Definition	Severity
TEN-02	Transfers User's Tokens	Minor 

```
function transfer(address to, uint256 amount) public virtual override returns (bool) {  
    address owner = _msgSender();  
    _transfer(owner, to, amount);  
    return true;  
}
```

**Location:** Token.sol#L235-239

## Alleviation:

Any user has the authority to transfer the balance of a user's address if the user has granted allowance. The contract does not subtract the allowance in the transferFrom() method, as a result, the transfer can be repeated until the user's balance go to zero.

### RECOMMENDATION

The team is advised to subtract the allowance in the transferFrom() method and migrate to a new contract..



## RECOMMENDATION

**Deployer and/or contract owner private keys are secured carefully.**

**Please refer to PAGE-09 CENTRALIZED PRIVILEGES for a detailed understanding.**

## ALLEVIATION

**TIDE EXCHANGE** project team understands the centralization risk. Some functions are provided privileged access to ensure a good runtime behaviour in the project





Identifier	Definition	Severity
TDB-12	Third Party Dependencies	Minor 

A smart contract is interacting with third-party protocols e.g., Uniswap, Pancakeswap router, cashier contract,

And protections contract. The scope of the audit treats third-party entities as black boxes and assumes their functional correctness. However, in the real world, third parties can be compromised and exploited. Moreover, upgrades in third parties can create severe impacts, e.g., increased transactional fees, deprecation of previous routers, etc.

## RECOMMENDATION

Inspect and validate third party dependencies regularly, and mitigate severe impacts whenever necessary.



## CERTIFICATE BY VITAL BLOCK SECURITY



## DISCLAIMERS

Vital Block Security provides the easy-to-understand audit of Solidity, Move, and Raw source codes (commonly known as smart contracts).

The smart contract for this particular audit was analyzed for common contract vulnerabilities, and centralization exploits. This audit report makes no statements or warranties on the security of the code. This audit report does not provide any warranty or guarantee regarding the absolute bug-free nature of the smart contract analyzed, nor do they provide any indication of the client's business, business model, or legal compliance. This audit report does not extend to the compiler layer, any other areas beyond the programming language, or other programming aspects that could present security risks. Cryptographic tokens are emergent technologies, they carry high levels of technical risks and uncertainty. You agree that your access and/or use, including but not limited to any services, reports, and materials, will be at your sole risk on an as-is, where-is, and as-available basis. This audit report could include false positives, false negatives, and other unpredictable results.

## CONFIDENTIALITY

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