

Security Assessment

# DRAGON CROWN

Verified On March 2<sup>nd</sup>, 2024

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PREPARED FOR:

DRAGON CROWN






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## INTRODUCTION

<b>Auditing Firm</b>	 <b>VITAL BLOCK SECURITY</b>
<b>Client Firm</b>	 <b>DRAGON CROWN</b>
<b>Methodology</b>	Automated Analysis, Manual Code Review
<b>Language</b>	Solidity
<b>Contract</b>	<a href="#">DCRN.sol</a> <a href="#">Factory.sol</a> <a href="#">MarginStakingManager.sol</a> <a href="#">Masterchef.sol</a> <a href="#">Presale.sol</a> <a href="#">Router.sol</a>
<b>Language</b>	Solidity
<b>Centralization</b>	Active ownership
<b>Network Chain</b>	 <b>Arbitrum One</b>
<b>Website</b>	<a href="https://dragoncrown.org/">https://dragoncrown.org/</a>
<b>Telegram Ann</b>	<a href="https://t.me/DRAGONCROWN_ANNOUNCEMENTS">https://t.me/DRAGONCROWN_ANNOUNCEMENTS</a>
<b>Telegram Chat</b>	<a href="https://t.me/DRAGONCROWN_CHAT">https://t.me/DRAGONCROWN_CHAT</a>
<b>Twitter</b>	<a href="https://twitter.com/DragonCrown">https://twitter.com/DragonCrown</a>
<b>Doc</b>	<a href="https://dragoncrown.org/DragonCrownDocs.pdf">https://dragoncrown.org/DragonCrownDocs.pdf</a>
<b>Prelim Report Date</b>	February 27 <sup>th</sup> , 2024
<b>Final Report Date</b>	March 2 <sup>nd</sup> 2024

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



## Document Properties


<b>Client</b>	DRAGON CROWN
<b>Title</b>	Smart Contract Audit Report
<b>Target</b>	DRAGON CROWN
<b>Audit Version</b>	3.0
<b>Author</b>	Akhmetshin Marat
<b>Auditors</b>	Akhmetshin Marat, James BK, Benny Matin
<b>Reviewed by</b>	Dima Meru
<b>Approved by</b>	Prince Mitchell
<b>Classification</b>	Public

## Version Info

Version	Date	Author(s)	Description
1.0.3	March 2 <sup>nd</sup> , 2024	James BK	Final Released
1.0.3-AP	March 2 <sup>nd</sup> , 2024	Benny Matin	Release Candidate

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In the following, we show the specific pull request and the commit hash value used in this audit.

- [PRESALE](#) (DR78740)
- [DCRN#code](#) (DTVP78)

## About Vital Block Security

Vital Block Security provides professional, thorough, fast, and easy-to-understand smart contract security audit. We do in-depth and penetrative static, manual, automated, and intelligent analysis of the smart contract. Some of our automated scans include tools like ConsenSys MythX, Mythril, Slither, Surya. We can audit custom smart contracts, Solidity, DApps, Rust, NFTs, etc (including the service of smart contract auditing). We are reachable at Telegram ([https://t.me/vital\\_block](https://t.me/vital_block)), Twitter ([http://twitter.com/Vb\\_Audit](http://twitter.com/Vb_Audit)), or Email ([info@vitalblock.org](mailto:info@vitalblock.org)).

Table 1.2: Vulnerability Severity Classification

Impact	High	Medium	Low
	Critical	High	Medium
	High	Medium	Low
	Medium	Low	Low
Likelihood			
High      Medium      Low			

## Methodology (1)

To standardize the evaluation, we define the following terminology based on the OWASP Risk Rating Methodology [4]:

- Likelihood represents how likely a particular vulnerability is to be uncovered and exploited in the wild;
- Impact measures the technical loss and business damage of a successful attack;
- Severity demonstrates the overall criticality of the risk.

## SCOPE OF WORK

Vital Block was consulted by **DRAGON CROWN** to conduct the smart contract audit of its Rust source code. The audit scope of work is strictly limited to mentioned .SOL file only:

O.DCRN.Sol  
O.FACTORY.Sol  
O.PRESALE.Sol  
O.MARGINSTAKINGMANAGER.Sol  
O.MASTERCHEF.Sol  
O.ROUTER.Sol

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

**Verify audited contract code Repo.**

### Public Contract Link

[O.DCRN.Sol](#)

[O.FACTORY.Sol](#)

[O.PRESALE.Sol](#)

[O.MARGINSTAKINGMANAGER.Sol](#)

[O.MASTERCHEF.Sol](#)

[O.ROUTER.Sol](#)



## 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 Security 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>
----------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

### **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.**










**Table 1.0 The Full Audit Checklist**

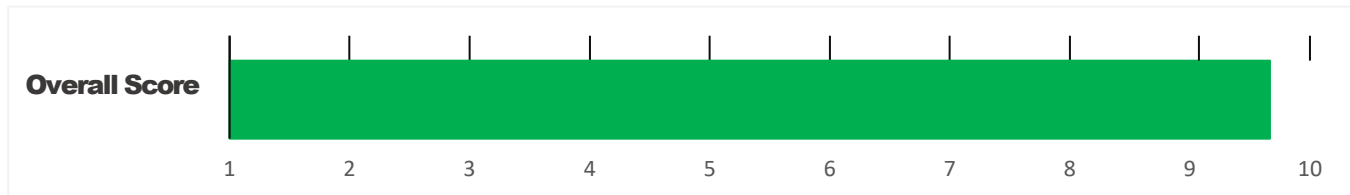
Category	Checklist Items
<b>Basic Coding Bugs</b>	Constructor Mismatch
	Ownership Takeover
	Redundant Fallback Function
	Overflows & Underflows
	Reentrancy
	Money-Giving Bug
	Blackhole
	Unauthorized Self-Destruct
	Revert DoS
	Unchecked External Call
	Gasless Send
	Send Instead Of Transfer
	Costly Loop
	(Unsafe) Use Of Untrusted Libraries
	(Unsafe) Use Of Predictable Variables
	Transaction Ordering Dependence
	Deprecated Uses
<b>Semantic Consistency Checks</b>	Semantic Consistency Checks
<b>Advanced DeFi Scrutiny</b>	Business Logics Review
	Functionality Checks
	Authentication Management
	Access Control & Authorization
	Oracle Security
	Digital Asset Escrow
	Kill-Switch Mechanism
	Operation Trails & Event Generation
	ERC20 Idiosyncrasies Handling
	Frontend-Contract Integration
	Deployment Consistency
	Holistic Risk Management
<b>Additional Recommendations</b>	Avoiding Use of Variadic Byte Array
	Using Fixed Compiler Version
	Making Visibility Level Explicit
	Making Type Inference Explicit
	Adhering To Function Declaration Strictly
	Following Other Best Practices



## EXECUTIVE SUMMARY

Vital Block Security has performed the automated and manual analysis of the **DRAGON CROWN** 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	0	2
Informational	0	0	2	0	1
Acknowledge	0	0	0	3	0
<b>Noteworthy</b> <b>OnlyOwner</b> <b>Privileges</b>					
Set Taxes and Ratios, Airdrop, Set Protection Settings, Set Reward Properties, Set Reflector Settings, Set Swap Settings, Set Pair and Router					

**DRAGON CROWN** Smart contract has achieved the following score: **97.0**



-  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.



## 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.**



## 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.



## Key Findings

Overall, these contracts are well-designed and engineered, though the implementation can be improved by resolving the identified issues (shown in Table 2.1), 2 medium-severity vulnerabilities, 3 low-severity vulnerabilities, and 2 informational recommendations.

Table 2.1: Key **DRAGON CROWN** Audit Findings

ID	Severity	Title	Category	Status
DNY-001	Low	<a href="#">In updateForaddress , the following equation is used inside an unchecked block</a>	Coding Practice	Fixed
DNY-002	Low	<a href="#">In updateFormapping , the following equation is used inside an unchecked block</a>	Business Logic	Fixed
DNY-003	Low	<a href="#">In updateForAmount, Relevant Function Snippet</a>	Coding Practice	Fixed
DNY-004	Informational	<a href="#">In updateForOwner, Relevant Function Snippet</a>	Coding Practice	Fixed
DNY-005	Informational	<a href="#">In Suggested Constant/Immutable Usages For Gas Efficiency</a>	Coding Practice	Fixed

Beside the identified issues, we emphasize that for any user-facing applications and services, it is always important to develop necessary risk-control mechanisms and make contingency plans, which may need to be exercised before the mainnet deployment. The risk-control mechanisms should kick in at the very moment when the contracts are being deployed on mainnet. Please refer to page 10 for details.






# AUDIT SCOPE

## DRAGON CROWN

ID	Repo	Comment	File	SHM321 Checksum
DBY	contracts/DCRN	cC512486	<a href="#">DCRN.sol</a>	6788099YIRHVS853PKFMGHEF44309200KDHFCBUGIJN
DBI	contracts/DCRN	cC512486	<a href="#">DCRN.sol</a>	347520JHDB7549H22H3BVDIOETYUHF009JBIKBDI33BJ4
DBW	contracts/DCRN	cC512486	<a href="#">DCRN.sol</a>	1988Y73HUGFDINN353840NFMTEJER73649RGFIMDIDH
DBG	contracts/DCRN	cC512486	<a href="#">DCRN.sol</a>	4438648TEOHBF6378309EHROECNEPOEJDNETE8EYEU3
DBL	contracts/Factory	cC512486	<a href="#">Factory.sol</a>	66390028765RVNKBDBYFTGW553T2KOEHIUUIIJE
DBA	contracts/Factory	cC512486	<a href="#">Factory.sol</a>	09825539BDYG543DVNKOMIKEBYRJUFHHFHJFIE333222
DBJ	contracts/Factory	cC512486	<a href="#">Factory.sol</a>	8654RJVT3DWI865YK26437903JJDGGDHGWY6E
DBE	contracts/Factory	cC512486	<a href="#">Factory.sol</a>	7763888636TGYGFFTFHBETT66TFTCTVYBHYT
DBP	Contracts/Presale	cC512486	<a href="#">Presale.sol</a>	88530486494YRHFEICBGEIEGWTWYUWUJEHEIE33U3
DBM	contracts/Presale	cC512486	<a href="#">Presale.sol</a>	1209873KHJLKJNFJHGE98763990029774BCUHHUU239
DBV	contracts/Presale	cC512486	<a href="#">Presalesol</a>	23456UGFYUHE98756EFHJHE7654ESDFGHGERTYUJ3897
DBQ	contracts/Maginstakingmanager	cC512486	<a href="#">MaginStakingManager.sol</a>	37889UHBIONE07TYRDFGVBN5678939IJWSFVDYUHDCL
DBS	contracts/Maninstakingmanager	cC512486	<a href="#">MaginStakingManager.sol</a>	678903098TFHJKFCPOIUGFGHJKE9865ERGBEIVBHE8767
DBR	contracts/Maginstakingmanager	cC512480	<a href="#">MaginStakingManager.sol</a>	98765SDFGBNFCOI56789UIYHGGHEJDIUYTRDCVBN3459
DCD	contracts/Masterchef	cC512481	<a href="#">Masterchef.sol</a>	3348y9808hgtrusvnm43100ejfojgfnut8496230hb574he
DHU	contracts/Masterchef	cC512481	<a href="#">Masterchef.sol</a>	9864byf5f379eig28ffre64085jv1613251guhkdmue87
DGG	contracts/Router	cC512481	<a href="#">Router.sol</a>	7ej2d8jg765tjfiowg538ij74dwftv6478ij3gs820
DTR	contracts/Router	cC512481	<a href="#">Router.sol</a>	864fr46de438hdguw903rfdcb246dbuhb2917enk



## AUTOMATED ANALYSIS

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

```

**DRAGON CROWN** | 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 | swapExactETHForTokens | 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 | **DCRN** | 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 |

```

## OPTIMIZATIONS | DRAGON CROWN

ID	Title	Category	Status
DTV	Logarithm Refinement Optimization	Gas Optimization	Acknowledged 
DOP	Checks Can Be Performed Earlier	Gas Optimization	Acknowledged 
DDP	Unnecessary Use Of SafeMath	Gas Optimization	Acknowledged 
DWY	Struct Optimization	Gas Optimization	Acknowledged 
DGT	Unused State Variable	Gas Optimization	Acknowledged 

## General Detectors



### DoS with Failed Call

This contract uses external calls that may fail, resulting in loss of functionality.



Attention  
Required



### Misuse of Boolean Constant

The usage of specific true/false values in this contract may lead to errors.



Attention  
Required



### Numeric Notation Best Practices

The numeric notation used in this contract is unconventional, possibly worsening the reading/debugging experience



Attention  
Required

- |                                                |                                                              |
|------------------------------------------------|--------------------------------------------------------------|
| ✓ No compiler version inconsistencies found    | ✓ No tautologies or contradictions found                     |
| ✓ No unchecked call responses found            | ✓ No faulty true/false values found                          |
| ✓ No vulnerable self-destruct functions found  | ✓ No inaccurate divisions found                              |
| ✓ No assertion vulnerabilities found           | ✓ No redundant constructor calls found                       |
| ✓ No old solidity code found                   | ✓ No vulnerable transfers found                              |
| ✓ No external delegated calls found            | ✓ No vulnerable return values found                          |
| ✓ No external call dependency found            | ✓ No uninitialized local variables found                     |
| ✓ No vulnerable authentication calls found     | ✓ No default function responses found                        |
| ✓ No invalid character typos found             | ✓ No missing arithmetic events found                         |
| ✓ No RTL characters found                      | ✓ No missing access control events found                     |
| ✓ No dead code found                           | ✓ No redundant true/false comparisons found                  |
| ✓ No risky data allocation found               | ✓ No state variables vulnerable through function calls found |
| ✓ No uninitialized state variables found       | ✓ No buggy low-level calls found                             |
| ✓ No uninitialized storage variables found     | ✓ No expensive loops found                                   |
| ✓ No vulnerable initialization functions found | ✓ No bad numeric notation practices found                    |
| ✓ No risky data handling found                 | ✓ No missing constant declarations found                     |
| ✓ No number accuracy bug found                 | ✓ No missing external function declarations found            |
| ✓ No out-of-range number vulnerability found   | ✓ No vulnerable payable functions found                      |
| ✓ No map data deletion vulnerabilities found   | ✓ No vulnerable message values found                         |



## DOY-01 Key Findings

Category	Severity ●	Location	Status
Coding Practice	Low	DCRN.sol Contracts – 427-435	Informational

### Description

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

```

constructor(
    address _owner
) ERC404("DragonCrown", "DCRN", 18, 10000, _owner) {
    balanceOf[_owner] = 10000 * 10 ** 18;
    feeWallet = _owner;

    setExcludeFromFee(msg.sender, true);
    setExcludeFromFee(address(this), true);
    setExcludeFromFee(address(BURN_ADDRESS), true);

```

The function `address()` does not have the override specifier. It should be noted that since `setExcludeFromFee` > a function that overrides only a single interface function does not require the override specifier. However, all other instances of this in the code base contain the override specifier.

### Recommendation

Incorporate the following verification within process approve account to confirm that the token Address associated mint aligns with the mint for which the confidential transfer approval is sought.



## DNY-02 Key Findings

Category	Severity ●	Target	Status
Business Logic	Medium	Contract/DCRN.sol 666-672	Fixed

### Description

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

```
contract BEP20 is Context, IBEP20, Ownable {
    using SafeMath for uint256;
    using Address for address;

    mapping(address => uint256) private _balances;

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

### Description

The function `Mapping ()` does not have the override specifier. It should be noted that since ( a function that overrides only a single interface function does not require the override specifier (see doc). However, all other instances of this in the code base contain the override specifier.

### Recommendation

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

## DNY-03 Key Findings

Category	Severity ●	Target	Status
Inconsistency	Informational	DCRN.sol 340-349	Acknowledge

### Description

In **updateForAmount**, Relevant Function Snippet

```

uint256 tokens_to_mint = (balanceOf[to] / unit) -
    (balanceBeforeReceiver / unit);
for (uint256 i = 0; i < tokens_to_mint; i++) {
    _mint(to);
}
}
emit ERC20Transfer(from, to, amount);
emit Transfer(from, to, amount);
}

```

### Description

The function **amount()** does not have the override specifier. It should be noted that since amount0 > a function That overrides only a single interface function does not require the override specifier. However, all other instances of this in the codebase contain the override specifier

### Recommendation

We recommend adding the override specifier to **amount()** or removing the override specifier from all other functions this applies to for consistency.

## DNY-04 Key Findings

Category	Severity ●	Target	Status
Coding Practices	low	contracts/Factory.sol 241-244	Informational

### Description

In `updateForOwner`, Relevant Function Snippet

```
function _approve(address owner, address spender, uint value) private {  
    allowance[owner][spender] = value;  
    emit Approval(owner, spender, value);  
}
```

### Description

For Ownership efficiency, the DRAGON CROWN Team is engineered with the reserve cache mechanism, which necessitates the common steps to be followed when operating with the reserve Ownership data in different scenarios, including the tax generation, update, and eventual persistence.

### Recommendation

Revise the above functions to following a consistent approach to use the reserve cache mechanism.

## DST-05 Key Findings

Category	Severity ●	Location	Status
Coding Practices	Low	Masterchef.sol 1150-1155	Informational

### Description

In Suggested Constant/Immutable Usages For Gas Efficiency

```
function massUpdatePools() public {
    uint256 length = poolInfo.length;
    for (uint256 pid = 0; pid < length; ++pid) {
        updatePool(pid);
    }
}
```

### Description

An immutable state variable can only be assigned during contract creation, but will remain constant throughout the life-time of a deployed contract. The main benefit of declaring a state as immutable is that reading the state is significantly cheaper than reading from regular storage, since it is not stored in storage anymore. Instead, an immutable state will be directly inserted into the runtime code.

-- Update reward variables for all pools. Be careful of gas spending!

### Recommendation

Revisit the state variable definition and make extensive use of constant gas/ immutable states.



## GDL-06 Key Findings

Category	Severity ●	Target	Status
Coding Practices	Medium	Pool-Presale 1043-1045	Fixed

### Description

**UpdateForProper EMode Category Use in Pool::PresaleBuy()**

```
function buy(uint _amount, address _referrer) public {  
    require(isPresaleOpen, "Presale is not open yet");  
    require(isList == false || whitelisted[msg.sender] == true);  
}
```

### Description

The The DRAGON CROWN project has a nice feature `credit delegation`, which allows a credit delegator to delegate the credit of their account's position to a sale. This feature requires proper accounting of delegation allowance and actual expenditure. While examining its implementation, we notice a key function `Buy()` does not properly follow the `credit delegation` logic.

To elaborate, we show Above this `buy()` function. This is a core sale function and is used to receive funds from the presale protocol.

### Recommendation

Ensure the `credit delegation` feature is consistently honored in all aspects of the presale pool.

## Vulnerability Scan

### REENTRANCY

✓ No reentrancy risk found

Severity

Major

Confidence Parameter

Certain

✗ **Mintable**: More amount of the **DRAGON CROWN** token can **NOT** be minted by a private wallet or contract. ( This is Essentially normal for most contracts )

```
contract DragonCrown is ERC404 {
    string public dataURI;
    string public baseTokenURI;
    string[] private colors = ['Barbie', 'Cyber blue', 'Sprited away',
    'Jade', 'Eva01', 'Eva001', 'Golden', 'Ancient monster', 'Cyberpunk',
    'Megatron'];

    // Addresses excluded from fees
    mapping(address => bool) public isExcludedFromFee;

    mapping(address => bool) public automatedMarketMakerPairs;

    // tax Fee Wallet address
    address public feeWallet;

    uint256 public buyFee = 2;
    uint256 public sellFee = 3;
```

## Vulnerability Description

## Scanning Line:



## Repository:

```
O.DCRN.Sol  
O.FACTORY.Sol  
O.PRESALE.Sol  
O.MARGINSTAKINGMANAGER.Sol  
O.MASTERCHEF.Sol  
O.ROUTER.Sol
```

## Audited Files

## Contract Creator Address

Not Established

## Deployed Contracts:

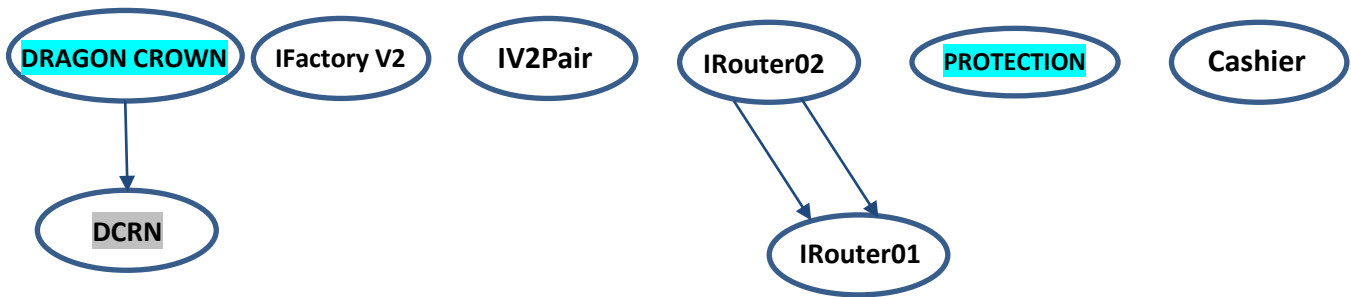
Not Deployed

## Creator TXH Contracts:

\*\*\*Not Refillable\*\*\*



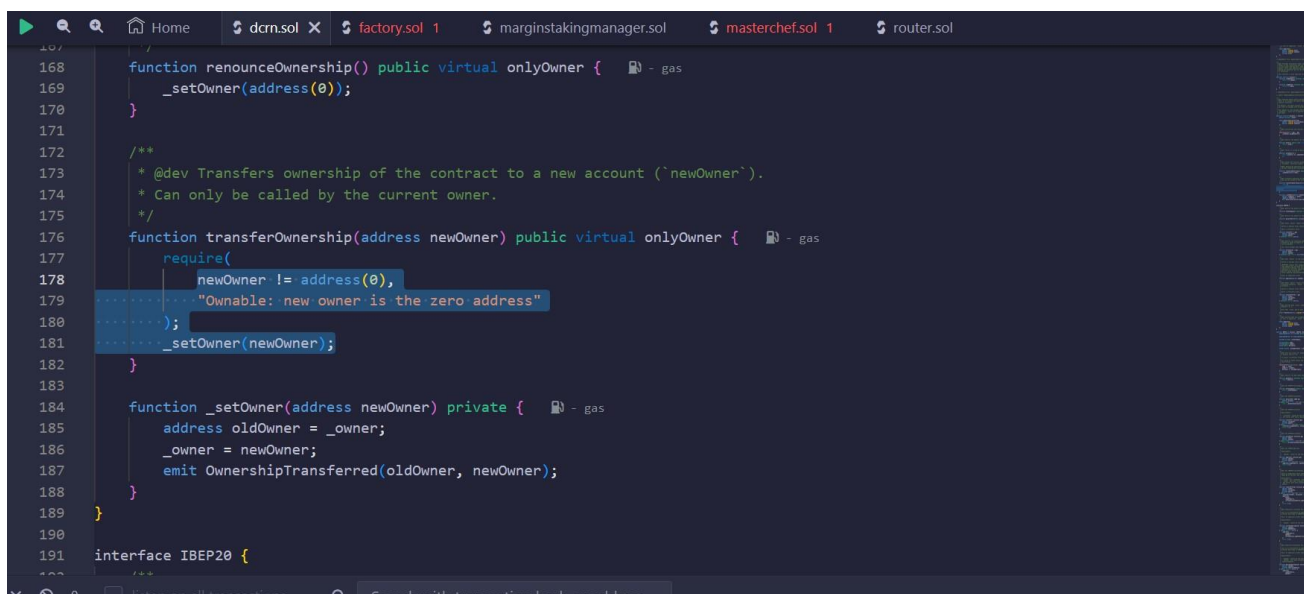
## INHERITANCE GRAPH



Identifier	Definition	Severity
CEN-12	Centralization privileges of DRAGON CROWN	Medium 🟡

Vulnerability 0 : No important security issue detected.

Threat level: Low



```

167
168 function renounceOwnership() public virtual onlyOwner {
169     _setOwner(address(0));
170 }
171
172 /**
173  * @dev Transfers ownership of the contract to a new account (`newOwner`).
174  * Can only be called by the current owner.
175  */
176 function transferOwnership(address newOwner) public virtual onlyOwner {
177     require(
178         newOwner != address(0),
179         "Ownable: new owner is the zero address"
180     );
181     _setOwner(newOwner);
182 }
183
184 function _setOwner(address newOwner) private {
185     address oldOwner = _owner;
186     _owner = newOwner;
187     emit OwnershipTransferred(oldOwner, newOwner);
188 }
189
190
191 interface IBEP20 {

```

# 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



## MANUAL REVIEW

**Dragon Crown (DCRN)** pioneers the convergence of decentralized finance (DeFi) and play-to-earn (P2E) gaming, aiming to establish a groundbreaking ecosystem driven by enhanced token utility and immersive user experiences. Dragon Crown merges two integral components: Dragon Crown Swap and Dragon Crown War.

**TOKEN NAME:** DRAGON CROWN

**Ticker:** DCRN

**DECIMALS:** 18

**Total Supply:** 10000000

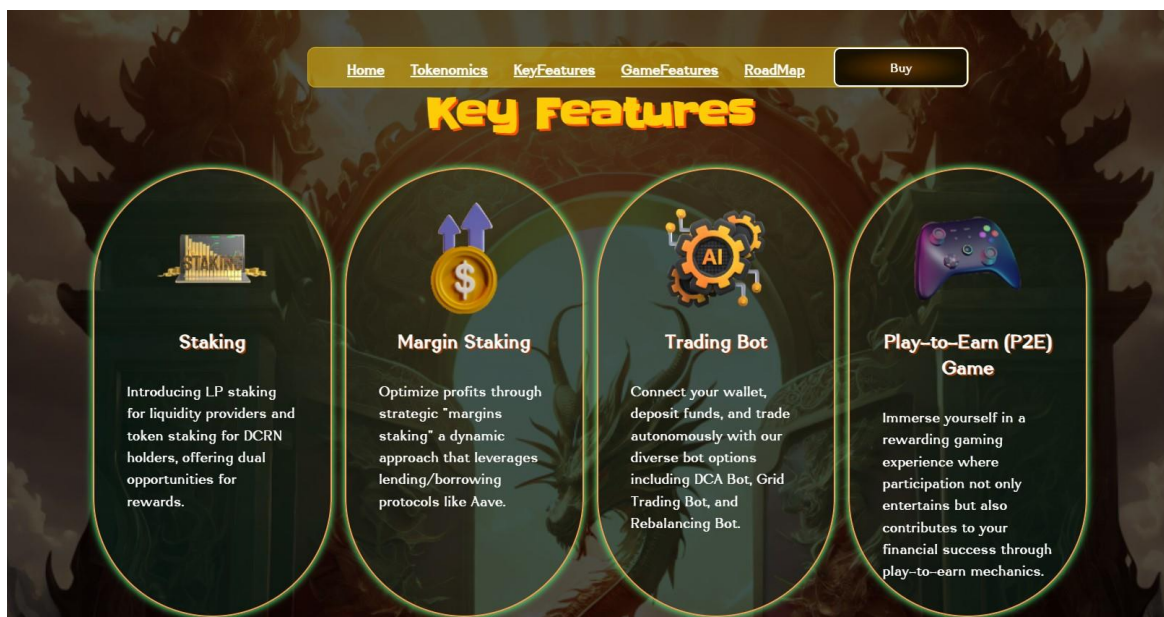
**Block Chain:** Arbitrum On

**Standard:** ERC404

**Tax System:** 3% sell fee / 2% buy fee:



### The DRAGON CROWN Platform Is Launching On The ARB Network



Identifier	Definition	Severity
CEN-02	Initial asset distribution	Minor 

**All of the initially minted assets are sent to the contract deployer when deploying the contract. This is Normal for most deployer and/or contract owner .**

```

constructor(
    address _owner
) ERC404("DragonCrown", "DCRN", 18, 10000, _owner) {
    balanceOf[_owner] = 10000 * 10 ** 18;
    feeWallet = _owner;

    setExcludeFromFee(msg.sender, true);
    setExcludeFromFee(address(this), true);
    setExcludeFromFee(address(BURN_ADDRESS), true);
}

function setDataURI(string memory _dataURI) public onlyOwner {
    dataURI = _dataURI;
}

function setTokenURI(string memory _tokenURI) public onlyOwner {
    baseTokenURI = _tokenURI;
}

```

## RECOMMENDATION

**Project stakeholders should be consulted during the initial asset distribution process.**

## RECOMMENDATION

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

**Please refer to PAGE-7 CENTRALIZED PRIVILEGES for a detailed understanding.**

## ALLEVIATION

**The DRAGON CROWN project team understands the centralization risk. Some functions are provided privileged access to ensure a good runtime behavior in the project**





## References

- 1 MITRE. CWE-1041: Use of Redundant Code. <https://cwe.mitre.org/data/definitions/1041.html>.
- 2 MITRE. CWE-1099: Inconsistent Naming Conventions for Identifiers. <https://cwe.mitre.org/data/definitions/1099.html>.
- 3 MITRE. CWE-561: Dead Code. <https://cwe.mitre.org/data/definitions/561.html>.
- 4 MITRE. CWE-563: Assignment to Variable without Use. <https://cwe.mitre.org/data/definitions/563.html>.
- 5 MITRE. CWE-663: Use of a Non-reentrant Function in a Concurrent Context. <https://cwe.mitre.org/data/definitions/663.html>.
- 6 MITRE. CWE-837: Improper Enforcement of a Single, Unique Action. <https://cwe.mitre.org/data/definitions/837.html>.
- 7 MITRE. CWE-841: Improper Enforcement of Behavioral Workflow. <https://cwe.mitre.org/data/definitions/841.html>.
- 8 MITRE. CWE CATEGORY: Bad Coding Practices. <https://cwe.mitre.org/data/definitions/1006.html>.
- 9 MITRE. CWE CATEGORY: Business Logic Errors. <https://cwe.mitre.org/data/definitions/840.html>.
- 10 MITRE. CWE CATEGORY: Concurrency. <https://cwe.mitre.org/data/definitions/557.html>.
- 11 MITRE. CWE VIEW: Development Concepts. <https://cwe.mitre.org/data/definitions/699.html>.
- 12 OWASP. Risk Rating Methodology. [https://www.owasp.org/index.php/OWASP\\_Risk\\_Rating\\_Methodology](https://www.owasp.org/index.php/OWASP_Risk_Rating_Methodology).



Identifier	Definition	Severity
COD-10	Third Party Dependencies	Minor 

Smart contract is interacting with third party protocols e.g., Pancakeswap router, cashier contract, 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.



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