HACKEN

SMART CONTRACT CODE REVIEW AND SECURITY ANALYSIS REPORT

Customer: DeRace
Date: July 27th, 2021

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Document

Name	Smart Contract Code Review and Security Analysis Report for DeRace - Initial Audit
Approved by	Andrew Matiukhin | CTO Hacken OU
Type	ERC20 Token
Platform	Ethereum / Solidity
Methods	Architecture Review, Functional Testing, Computer-Aided Verification, Manual Review
Git repository	https://github.com/Derace/contract
Commit	12edd72367d9bd0e5b58c5f20cec45f48c31105c
Timeline	26 JULY 2021 - 27 JULY 2021
Changelog	27 JULY 2021 - INITIAL AUDIT

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Introduction

Hacken OÜ (Consultant) was contracted by DeRace (Customer) to conduct a Smart Contract Code Review and Security Analysis. This report presents the findings of the security assessment of the Customer's smart contract and its code review conducted between July 26th, 2021 - July 27th, 2021.

Scope

The scope of the project is the smart contracts in the git repository:

```
Repository:
      https://github.com/Derace/contract
Commit:
      12edd72367d9bd0e5b58c5f20cec45f48c31105c
Files:
      contract/DeRaceToken.sol
```

We have scanned these smart contracts for commonly known and more specific vulnerabilities. Here are some of the commonly known vulnerabilities that are considered:

Category	Check Item
Code review	▪ Reentrancy ▪ Ownership Takeover ▪ Timestamp Dependence ▪ Gas Limit and Loops ▪ DoS with (Unexpected) Throw ▪ DoS with Block Gas Limit ▪ Transaction-Ordering Dependence ▪ Style guide violation ▪ Costly Loop ▪ ERC20 API violation ▪ Unchecked external call ▪ Unchecked math ▪ Unsafe type inference ▪ Implicit visibility level ▪ Deployment Consistency ▪ Repository Consistency ▪ Data Consistency

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Functional review	▪ Business Logics Review ▪ Functionality Checks ▪ Access Control & Authorization ▪ Escrow manipulation ▪ Token Supply manipulation ▪ Asset’s integrity ▪ User Balances manipulation ▪ Kill-Switch Mechanism ▪ Operation Trails & Event Generation

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Executive Summary

According to the assessment, the Customer's smart contracts are secured but have issues with gas savings and the absence of the initial minting event.

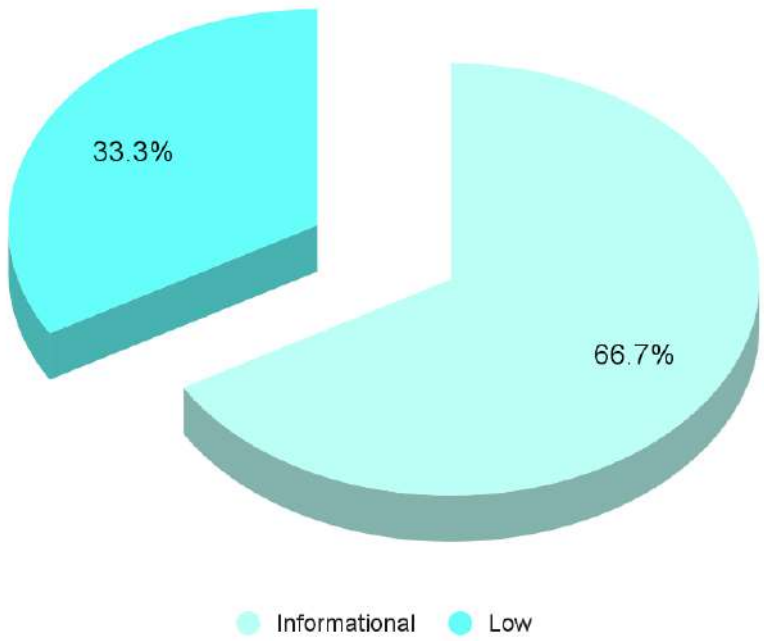
Insecure	Poor secured	Secured	Well-secured

You are here

Our team performed an analysis of code functionality, manual audit, and automated checks with Mythril and Slither. All issues found during automated analysis were manually reviewed, and important vulnerabilities are presented in the Audit overview section. All found issues can be found in the Audit overview section.

Security engineers found **1** low and **2** informational issues during the first review.

Graph 1. The distribution of vulnerabilities after the first review.



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Severity Definitions

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

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Audit overview

Critical

No Critical severity issues were found.

High

No High severity issues were found.

Medium

No Medium severity issues were found.

Low

1. **Issue:** Missing event on initial minting.

   The initial minting for total supply to the contract deployer is done without emitting an event. That makes it difficult to track where and when the initial amount was given.

   Recommendation: Please emit the *Transfer(0x0, _msgSender(), _totalSupply)* event.

   Lines: #104-106

```
constructor() {
    _balances[_msgSender()] = _totalSupply;
}
```

Lowest / Code style / Best Practice

1. **Issue:** View function that could be declared pure.

   view functions that never access any state variables or functions should be declared **pure** to save gas.

   Recommendation: Use the **pure** attribute for functions that never access the state variables.

   Lines: #108

```
function name() public view virtual returns (string memory) {
```

   Lines: #112

```
function symbol() public view virtual returns (string memory) {
```

Lines: #116

```
function decimals() public view virtual returns (uint8) {
```

2. **Issue:** Public function that could be declared external.

   public functions that are never called by the contract should be declared **external** to save gas.

   Recommendation: Use the **external** attribute for functions never called from the contract.

   Lines: #108

   ```
   function name() public view virtual returns (string memory) {
   ```

   Lines: #112

   ```
   function symbol() public view virtual returns (string memory) {
   ```

   Lines: #116

   ```
   function decimals() public view virtual returns (uint8) {
   ```

   Lines: #120

   ```
   function totalSupply() public view virtual returns (uint256) {
   ```

   Lines: #124

   ```
   function balanceOf(address account) public view virtual returns
   (uint256) {
   ```

   Lines: #133

   ```
   function allowance(address owner, address spender) public view virtual
   returns (uint256) {
   ```

Conclusion

Smart contracts within the scope were manually reviewed and analyzed with static analysis tools.

The audit report contains all found security vulnerabilities and other issues in the reviewed code.

Security engineers found **1** low and **2** informational issues during the first review.

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Disclaimers

Hacken Disclaimer

The smart contracts given for audit have been analyzed in accordance with the best industry practices at the date of this report, in relation to cybersecurity vulnerabilities and issues in smart contract source code, the details of which are disclosed in this report (Source Code); the Source Code compilation, deployment, and functionality (performing the intended functions).

The audit makes no statements or warranties on security of the code. It also cannot be considered as a sufficient assessment regarding the utility and safety of the code, bugfree status or any other statements of the contract. While we have done our best in conducting the analysis and producing this report, it is important to note that you should not rely on this report only - we recommend proceeding with several independent audits and a public bug bounty program to ensure security of smart contracts.

Technical Disclaimer

Smart contracts are deployed and executed on the blockchain platform. The platform, its programming language, and other software related to the smart contract can have its vulnerabilities that can lead to hacks. Thus, the audit can't guarantee the explicit security of the audited smart contracts.