Guard

Smart contracts security assessment

Final report

Tariff: Standard

tpass token

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0xguard.com

hello@0xguard.com

Contents

Introduction

The report was prepared for the Tpass team.

The audited contract is an ERC20 token with a fixed supply and burn mechanisms when a user can burn his tokens.

Name	tpass token
Audit date	2021-11-11 - 2021-11-11
Language	Solidity
Platform	Ethereum

Contracts checked

Name	Address
TokenMintERC20Token	0xFe27e41897a062F441B3FA97A5562f1b980DB602

Procedure

We perform our audit according to the following procedure:

Automated analysis

- Scanning the project's smart contracts with several publicly available automated Solidity analysis tools
- Manual verification (reject or confirm) all the issues found by the tools

Manual audit

- Manually analyse smart contracts for security vulnerabilities
- Smart contracts' logic check

Known vulnerabilities checked

Title	Check result
Unencrypted Private Data On-Chain	passed
Code With No Effects	passed
Message call with hardcoded gas amount	passed
Typographical Error	passed
DoS With Block Gas Limit	passed
Presence of unused variables	passed
Incorrect Inheritance Order	passed
Requirement Violation	passed
Weak Sources of Randomness from Chain Attributes	passed
Shadowing State Variables	passed
Incorrect Constructor Name	passed
Block values as a proxy for time	passed
Authorization through tx.origin	passed
DoS with Failed Call	passed
Delegatecall to Untrusted Callee	passed
Use of Deprecated Solidity Functions	passed
Assert Violation	passed
State Variable Default Visibility	passed
Reentrancy	passed
Unprotected SELFDESTRUCT Instruction	passed
Unprotected Ether Withdrawal	passed

Unchecked Call Return Value	passed
Floating Pragma	not passed
Outdated Compiler Version	not passed
Integer Overflow and Underflow	passed
Function Default Visibility	passed

Classification of issue severity

High severity	High severity issues can cause a significant or full loss of funds, change of contract ownership, major interference with contract logic. Such issues require immediate attention.
Medium severity	Medium severity issues do not pose an immediate risk, but can be detrimental to the client's reputation if exploited. Medium severity issues may lead to a contract failure and can be fixed by modifying the contract state or redeployment. Such issues require attention.
Low severity	Low severity issues do not cause significant destruction to the contract's functionality. Such issues are recommended to be taken into consideration.

Issues

High severity issues

No issues were found

Medium severity issues

No issues were found

Low severity issues

1. Outdated Solidity version (TokenMintERC20Token)

The contract is compiled with an outdated Solidity version 0.5.12. See SWC-102.

Recommendation: We recommend using at least Solidity version 0.7.6.

2. Some functions could be declared external to save gas (TokenMintERC20Token)

Functions decimals(), symbol(), name(), burn(), totalSupply(), balanceOf(), transfer(), allowance(), approve(), transferFrom(), increaseAllowance(), decreaseAllowance() could be declared external instead of public. This will save some gas on calling them via smart contracts.

Recommendation: Make these functions external

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Static code analysis result

Slither tool analysis results:

```
INFO:Detectors:
TokenMintERC20Token.constructor(string,string,uint8,uint256,address,address).name
(contracts/Greeter.sol#451) shadows:
        - TokenMintERC20Token.name() (contracts/Greeter.sol#476-478) (function)
TokenMintERC20Token.constructor(string,string,uint8,uint256,address,address).symbol
(contracts/Greeter.sol#451) shadows:
        - TokenMintERC20Token.symbol() (contracts/Greeter.sol#483-485) (function)
TokenMintERC20Token.constructor(string,string,uint8,uint256,address,address).decimals
(contracts/Greeter.sol#451) shadows:
        - TokenMintERC20Token.decimals() (contracts/Greeter.sol#490-492) (function)
TokenMintERC20Token.constructor(string,string,uint8,uint256,address,address).totalSupply
 (contracts/Greeter.sol#451) shadows:
        - ERC20.totalSupply() (contracts/Greeter.sol#235-237) (function)
        - IERC20.totalSupply() (contracts/Greeter.sol#17) (function)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#local-variable-
shadowing
INFO:Detectors:
TokenMintERC20Token.constructor(string,string,uint8,uint256,address,address).feeReceiver
 (contracts/Greeter.sol#451) lacks a zero-check on :
                - feeReceiver.transfer(msg.value) (contracts/Greeter.sol#460)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#missing-zero-
address-validation
INFO:Detectors:
ERC20._burnFrom(address,uint256) (contracts/Greeter.sol#418-421) is never used and
should be removed
SafeMath.div(uint256,uint256) (contracts/Greeter.sol#168-175) is never used and should
be removed
SafeMath.mod(uint256,uint256) (contracts/Greeter.sol#188-191) is never used and should
be removed
SafeMath.mul(uint256,uint256) (contracts/Greeter.sol#143-155) is never used and should
be removed
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#dead-code
INFO:Detectors:
Pragma version^0.5.0 (contracts/Greeter.sol#7) allows old versions
Pragma version^0.5.0 (contracts/Greeter.sol#86) allows old versions
```

```
Pragma version^0.5.0 (contracts/Greeter.sol#196) allows old versions
Pragma version^0.5.0 (contracts/Greeter.sol#426) allows old versions
solc-0.5.12 is not recommended for deployment
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#incorrect-
versions-of-solidity
INFO:Detectors:
totalSupply() should be declared external:
        - ERC20.totalSupply() (contracts/Greeter.sol#235-237)
balanceOf(address) should be declared external:
        - ERC20.balanceOf(address) (contracts/Greeter.sol#242-244)
transfer(address,uint256) should be declared external:
        - ERC20.transfer(address,uint256) (contracts/Greeter.sol#254-257)
allowance(address,address) should be declared external:
        - ERC20.allowance(address,address) (contracts/Greeter.sol#262-264)
approve(address,uint256) should be declared external:
        - ERC20.approve(address,uint256) (contracts/Greeter.sol#273-276)
transferFrom(address,address,uint256) should be declared external:
        - ERC20.transferFrom(address,address,uint256) (contracts/Greeter.sol#290-294)
increaseAllowance(address,uint256) should be declared external:
        - ERC20.increaseAllowance(address,uint256) (contracts/Greeter.sol#308-311)
decreaseAllowance(address,uint256) should be declared external:
        - ERC20.decreaseAllowance(address,uint256) (contracts/Greeter.sol#327-330)
burn(uint256) should be declared external:
        - TokenMintERC20Token.burn(uint256) (contracts/Greeter.sol#467-469)
name() should be declared external:
        - TokenMintERC20Token.name() (contracts/Greeter.sol#476-478)
symbol() should be declared external:
        - TokenMintERC20Token.symbol() (contracts/Greeter.sol#483-485)
decimals() should be declared external:
        - TokenMintERC20Token.decimals() (contracts/Greeter.sol#490-492)
Reference: https://github.com/crytic/slither/wiki/Detector-Documentation#public-
function-that-could-be-declared-external
```

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