Smart Contract Security Audit Report

[2021]

The SlowMist Security Team received the team's application for smart contract security audit of the tpass on 2021.12.15. The following are the details and results of this smart contract security audit:

Token Name :

tpass

The contract address :

https://etherscan.io/address/0xFe27e41897a062F441B3FA97A5562f1b980DB602

The audit items and results :

(Other unknown security vulnerabilities are not included in the audit responsibility scope)

NO.	Audit Items	Result
1	Replay Vulnerability	Passed
2	Denial of Service Vulnerability	Passed
3	Race Conditions Vulnerability	Passed
4	Authority Control Vulnerability	Passed
5	Integer Overflow and Underflow Vulnerability	Passed
6	Gas Optimization Audit	Passed
7	Design Logic Audit	Passed
8	Uninitialized Storage Pointers Vulnerability	Passed
9	Arithmetic Accuracy Deviation Vulnerability	Passed
10	"False top-up" Vulnerability	Passed
11	Malicious Event Log Audit	Passed
12	Scoping and Declarations Audit	Passed

NO.	Audit Items	Result
13	Safety Design Audit	Passed

Audit Result : Passed

Audit Number : 0X002112170002

Audit Date : 2021.12.15 - 2021.12.17

Audit Team : SlowMist Security Team

Summary conclusion : This is a token contract that does not contain the tokenVault section. The total amount of contract tokens can be changed, users can burn their own tokens through the burn function. SafeMath security module is used, which is a recommended approach. The contract does not have the Overflow and the Race Conditions issue.

The source code:

```
/**
 *Submitted for verification at Etherscan.io on 2021-01-12
*/

// File: contracts\open-zeppelin-contracts\token\ERC20\IERC20.sol
//SlowMist// The contract does not have the Overflow and the Race Conditions issue
pragma solidity ^0.5.0;

/**
 * @dev Interface of the ERC20 standard as defined in the EIP. Does not include
 * the optional functions; to access them see `ERC20Detailed`.
 */
interface IERC20 {
    /**
     * @dev Returns the amount of tokens in existence.
     */
    function totalSupply() external view returns (uint256);

    /**
     * @dev Returns the amount of tokens owned by `account`.
     */
    function balanceOf(address account) external view returns (uint256);

    /**
     * @dev Moves `amount` tokens from the caller's account to `recipient`.
     *
     * Returns a boolean value indicating whether the operation succeeded.
     *
     * Emits a `Transfer` event.
     */
    function transfer(address recipient, uint256 amount) external returns (bool);

    /**
     * @dev Returns the remaining number of tokens that `spender` will be
     * allowed to spend on behalf of `owner` through `transferFrom`. This is
     * zero by default.
     *
     * This value changes when `approve` or `transferFrom` are called.
     */
    function allowance(address owner, address spender) external view returns
(uint256);

    /**
     * @dev Sets `amount` as the allowance of `spender` over the caller's tokens.
     *
     * Returns a boolean value indicating whether the operation succeeded.
     *
     * > Beware that changing an allowance with this method brings the risk
     * that someone may use both the old and the new allowance by unfortunate
     * transaction ordering. One possible solution to mitigate this race
     * condition is to first reduce the spender's allowance to 0 and set the
     * desired value afterwards:
     * https://github.com/ethereum/EIPs/issues/20#issuecomment-263524729
     *
     * Emits an `Approval` event.
     */
    function approve(address spender, uint256 amount) external returns (bool);

    /**
     * @dev Moves `amount` tokens from `sender` to `recipient` using the
     * allowance mechanism. `amount` is then deducted from the caller's
     * allowance.
     *
     * Returns a boolean value indicating whether the operation succeeded.
     *
     * Emits a `Transfer` event.
     */
    function transferFrom(address sender, address recipient, uint256 amount) external
returns (bool);

    /**
     * @dev Emitted when `value` tokens are moved from one account (`from`) to
     * another (`to`).
     *
     * Note that `value` may be zero.
     */
    event Transfer(address indexed from, address indexed to, uint256 value);

    /**
     * @dev Emitted when the allowance of a `spender` for an `owner` is set by
     * a call to `approve`. `value` is the new allowance.
     */
    event Approval(address indexed owner, address indexed spender, uint256 value);
}

// File: contracts\open-zeppelin-contracts\math\SafeMath.sol

pragma solidity ^0.5.0;

/**
 * @dev Wrappers over Solidity's arithmetic operations with added overflow
 * checks.
 *
 * Arithmetic operations in Solidity wrap on overflow. This can easily result
 * in bugs, because programmers usually assume that an overflow raises an
 * error, which is the standard behavior in high level programming languages.
 * `SafeMath` restores this intuition by reverting the transaction when an
 * operation overflows.
 *
 * Using this library instead of the unchecked operations eliminates an entire
 * class of bugs, so it's recommended to use it always.
 */
//SlowMist// SafeMath security module is used, which is a recommended approach
library SafeMath {
    /**
     * @dev Returns the addition of two unsigned integers, reverting on
     * overflow.
     *
     * Counterpart to Solidity's `+` operator.
     *
     * Requirements:
     * - Addition cannot overflow.
     */
    function add(uint256 a, uint256 b) internal pure returns (uint256) {
        uint256 c = a + b;
        require(c >= a, "SafeMath: addition overflow");

        return c;
    }

    /**
     * @dev Returns the subtraction of two unsigned integers, reverting on
     * overflow (when the result is negative).
     *
     * Counterpart to Solidity's `-` operator.
     *
     * Requirements:
     * - Subtraction cannot overflow.
     */
    function sub(uint256 a, uint256 b) internal pure returns (uint256) {
        require(b <= a, "SafeMath: subtraction overflow");
        uint256 c = a - b;

        return c;
    }

    /**
     * @dev Returns the multiplication of two unsigned integers, reverting on
     * overflow.
     *
     * Counterpart to Solidity's `*` operator.
     *
     * Requirements:
     * - Multiplication cannot overflow.
     */
    function mul(uint256 a, uint256 b) internal pure returns (uint256) {
        // Gas optimization: this is cheaper than requiring 'a' not being zero, but
the
        // benefit is lost if 'b' is also tested.
        // See: https://github.com/OpenZeppelin/openzeppelin-solidity/pull/522
        if (a == 0) {
            return 0;
        }
        uint256 c = a * b;
        require(c / a == b, "SafeMath: multiplication overflow");

        return c;
    }

    /**
     * @dev Returns the integer division of two unsigned integers. Reverts on
     * division by zero. The result is rounded towards zero.
     *
     * Counterpart to Solidity's `/` operator. Note: this function uses a
     * `revert` opcode (which leaves remaining gas untouched) while Solidity
     * uses an invalid opcode to revert (consuming all remaining gas).
     *
     * Requirements:
     * - The divisor cannot be zero.
     */
    function div(uint256 a, uint256 b) internal pure returns (uint256) {
        // Solidity only automatically asserts when dividing by 0
        require(b > 0, "SafeMath: division by zero");
        uint256 c = a / b;
        // assert(a == b * c + a % b); // There is no case in which this doesn't hold

        return c;
    }

    /**
     * @dev Returns the remainder of dividing two unsigned integers. (unsigned
integer modulo),
     * Reverts when dividing by zero.
     *
     * Counterpart to Solidity's `%` operator. This function uses a `revert`
     * opcode (which leaves remaining gas untouched) while Solidity uses an
     * invalid opcode to revert (consuming all remaining gas).
     *
     * Requirements:
     * - The divisor cannot be zero.
     */
    function mod(uint256 a, uint256 b) internal pure returns (uint256) {
        require(b != 0, "SafeMath: modulo by zero");
        return a % b;
    }
}
```

```
// File: contracts\open-zeppelin-contracts\token\ERC20\ERC20.sol

pragma solidity ^0.5.0;



/**
 * @dev Implementation of the `IERC20` interface.
 *
 * This implementation is agnostic to the way tokens are created. This means
 * that a supply mechanism has to be added in a derived contract using `_mint`.
 * For a generic mechanism see `ERC20Mintable`.
 *
 * *For a detailed writeup see our guide [How to implement supply
 * mechanisms](https://forum.zeppelin.solutions/t/how-to-implement-erc20-supply-
mechanisms/226).*
 *
 * We have followed general OpenZeppelin guidelines: functions revert instead
 * of returning `false` on failure. This behavior is nonetheless conventional
 * and does not conflict with the expectations of ERC20 applications.
 *
 * Additionally, an `Approval` event is emitted on calls to `transferFrom`.
 * This allows applications to reconstruct the allowance for all accounts just
 * by listening to said events. Other implementations of the EIP may not emit
 * these events, as it isn't required by the specification.
 *
 * Finally, the non-standard `decreaseAllowance` and `increaseAllowance`
 * functions have been added to mitigate the well-known issues around setting
 * allowances. See `IERC20.approve`.
 */
contract ERC20 is IERC20 {
    using SafeMath for uint256;

    mapping (address => uint256) private _balances;

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

    uint256 private _totalSupply;

    /**
     * @dev See `IERC20.totalSupply`.
     */
    function totalSupply() public view returns (uint256) {
        return _totalSupply;
    }

    /**
     * @dev See `IERC20.balanceOf`.
     */
    function balanceOf(address account) public view returns (uint256) {
        return _balances[account];
    }

    /**
     * @dev See `IERC20.transfer`.
     *
     * Requirements:
     *
     * - `recipient` cannot be the zero address.
     * - the caller must have a balance of at least `amount`.
     */
    function transfer(address recipient, uint256 amount) public returns (bool) {
        _transfer(msg.sender, recipient, amount);
        //SlowMist// The return value conforms to the EIP20 specification
        return true;
    }

    /**
     * @dev See `IERC20.allowance`.
     */
    function allowance(address owner, address spender) public view returns (uint256)
{
        return _allowances[owner][spender];
    }

    /**
     * @dev See `IERC20.approve`.
     *
     * Requirements:
     *
     * - `spender` cannot be the zero address.
     */
    function approve(address spender, uint256 value) public returns (bool) {
        _approve(msg.sender, spender, value);
        //SlowMist// The return value conforms to the EIP20 specification
        return true;
    }
    /**
     * @dev See `IERC20.transferFrom`.
     *
     * Emits an `Approval` event indicating the updated allowance. This is not
     * required by the EIP. See the note at the beginning of `ERC20`;
     *
     * Requirements:
     * - `sender` and `recipient` cannot be the zero address.
     * - `sender` must have a balance of at least `value`.
     * - the caller must have allowance for `sender`'s tokens of at least
     * `amount`.
     */
    function transferFrom(address sender, address recipient, uint256 amount) public
returns (bool) {
        _transfer(sender, recipient, amount);
        _approve(sender, msg.sender, _allowances[sender][msg.sender].sub(amount));
        //SlowMist// The return value conforms to the EIP20 specification
        return true;
    }

    /**
     * @dev Atomically increases the allowance granted to `spender` by the caller.
     *
     * This is an alternative to `approve` that can be used as a mitigation for
     * problems described in `IERC20.approve`.
     *
     * Emits an `Approval` event indicating the updated allowance.
     *
     * Requirements:
     *
     * - `spender` cannot be the zero address.
     */
    function increaseAllowance(address spender, uint256 addedValue) public returns
(bool) {
        _approve(msg.sender, spender, _allowances[msg.sender]
[spender].add(addedValue));
        return true;
    }

    /**
     * @dev Atomically decreases the allowance granted to `spender` by the caller.
     *
     * This is an alternative to `approve` that can be used as a mitigation for
     * problems described in `IERC20.approve`.
     *
     * Emits an `Approval` event indicating the updated allowance.
     *
     * Requirements:
     *
     * - `spender` cannot be the zero address.
     * - `spender` must have allowance for the caller of at least
     * `subtractedValue`.
     */
    function decreaseAllowance(address spender, uint256 subtractedValue) public
returns (bool) {
        _approve(msg.sender, spender, _allowances[msg.sender]
[spender].sub(subtractedValue));
        return true;
    }

    /**
     * @dev Moves tokens `amount` from `sender` to `recipient`.
     *
     * This is internal function is equivalent to `transfer`, and can be used to
     * e.g. implement automatic token fees, slashing mechanisms, etc.
     *
     * Emits a `Transfer` event.
     *
     * Requirements:
     *
     * - `sender` cannot be the zero address.
     * - `recipient` cannot be the zero address.
     * - `sender` must have a balance of at least `amount`.
     */
    function _transfer(address sender, address recipient, uint256 amount) internal {
        require(sender != address(0), "ERC20: transfer from the zero address");
        //SlowMist// This kind of check is very good, avoiding user mistake leading
to the loss of token during transfer
        require(recipient != address(0), "ERC20: transfer to the zero address");

        _balances[sender] = _balances[sender].sub(amount);
        _balances[recipient] = _balances[recipient].add(amount);
        emit Transfer(sender, recipient, amount);
    }

    /** @dev Creates `amount` tokens and assigns them to `account`, increasing
     * the total supply.
     *
     * Emits a `Transfer` event with `from` set to the zero address.
     *
     * Requirements
     *
     * - `to` cannot be the zero address.
     */
    function _mint(address account, uint256 amount) internal {
        require(account != address(0), "ERC20: mint to the zero address");

        _totalSupply = _totalSupply.add(amount);
        _balances[account] = _balances[account].add(amount);
        emit Transfer(address(0), account, amount);
    }

     /**
     * @dev Destroys `amount` tokens from `account`, reducing the
     * total supply.
     *
     * Emits a `Transfer` event with `to` set to the zero address.
     *
     * Requirements
     *
     * - `account` cannot be the zero address.
     * - `account` must have at least `amount` tokens.
     */
    function _burn(address account, uint256 value) internal {
        require(account != address(0), "ERC20: burn from the zero address");

        _totalSupply = _totalSupply.sub(value);
        _balances[account] = _balances[account].sub(value);
        emit Transfer(account, address(0), value);
    }

    /**
     * @dev Sets `amount` as the allowance of `spender` over the `owner`s tokens.
     *
     * This is internal function is equivalent to `approve`, and can be used to
     * e.g. set automatic allowances for certain subsystems, etc.
     *
     * Emits an `Approval` event.
     *
     * Requirements:
     *
     * - `owner` cannot be the zero address.
     * - `spender` cannot be the zero address.
     */
    function _approve(address owner, address spender, uint256 value) internal {
        require(owner != address(0), "ERC20: approve from the zero address");
        //SlowMist// This kind of check is very good, avoiding user mistake leading
to approve errors
        require(spender != address(0), "ERC20: approve to the zero address");

        _allowances[owner][spender] = value;
        emit Approval(owner, spender, value);
    }

    /**
     * @dev Destoys `amount` tokens from `account`.`amount` is then deducted
     * from the caller's allowance.
     *
     * See `_burn` and `_approve`.
     */
    function _burnFrom(address account, uint256 amount) internal {
        _burn(account, amount);
        _approve(account, msg.sender, _allowances[account][msg.sender].sub(amount));
    }
}

// File: contracts\ERC20\TokenMintERC20Token.sol

pragma solidity ^0.5.0;


/**
 * @title TokenMintERC20Token
 * @author TokenMint (visit https://tokenmint.io)
 *
 * @dev Standard ERC20 token with burning and optional functions implemented.
 * For full specification of ERC-20 standard see:
 * https://github.com/ethereum/EIPs/blob/master/EIPS/eip-20.md
 */
contract TokenMintERC20Token is ERC20 {

    string private _name;
    string private _symbol;
    uint8 private _decimals;
    /**
     * @dev Constructor.
     * @param name name of the token
     * @param symbol symbol of the token, 3-4 chars is recommended
     * @param decimals number of decimal places of one token unit, 18 is widely used
     * @param totalSupply total supply of tokens in lowest units (depending on
decimals)
     * @param tokenOwnerAddress address that gets 100% of token supply
     */
    constructor(string memory name, string memory symbol, uint8 decimals, uint256
totalSupply, address payable feeReceiver, address tokenOwnerAddress) public payable {
      _name = name;
      _symbol = symbol;
      _decimals = decimals;

      // set tokenOwnerAddress as owner of all tokens
      _mint(tokenOwnerAddress, totalSupply);

      // pay the service fee for contract deployment
      feeReceiver.transfer(msg.value);
    }

    /**
     * @dev Burns a specific amount of tokens.
     * @param value The amount of lowest token units to be burned.
     */
    function burn(uint256 value) public {
      _burn(msg.sender, value);
    }

    // optional functions from ERC20 stardard

    /**
     * @return the name of the token.
     */
    function name() public view returns (string memory) {
      return _name;
    }

    /**
     * @return the symbol of the token.
     */
    function symbol() public view returns (string memory) {
      return _symbol;
    }

    /**
     * @return the number of decimals of the token.
     */
    function decimals() public view returns (uint8) {
      return _decimals;
    }
}
```

Statement

SlowMist issues this report with reference to the facts that have occurred or existed before the issuance of this report, and only assumes corresponding responsibility based on these.

For the facts that occurred or existed after the issuance, SlowMist is not able to judge the security status of this project, and is not responsible for them. The security audit analysis and other contents of this report are based on the documents and materials provided to SlowMist by the information provider till the date of the insurance report (referred to as "provided information"). SlowMist assumes: The information provided is not missing, tampered with, deleted or concealed. If the information provided is missing, tampered with, deleted, concealed, or inconsistent with the actual situation, the SlowMist shall not be liable for any loss or adverse effect resulting therefrom. SlowMist only conducts the agreed security audit on the security situation of the project and issues this report. SlowMist is not responsible for the background and other conditions of the project.