SOLIDProof

*Bring trust into your projects*

**Blockchain Security | Smart Contract Audits | KYC**

MADE IN GERMANY

# Ubuntu Tribe

# Audit

## Security Assessment

## 26. February, 2022

For

Ubuntu Tribe

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| Version | Date | Description |
|---|---|---|
| 1.0 | 25. February 2022 | • Layout project<br>• Automated- /Manual-Security Testing<br>• Summary |
| 1.1 | 26. February 2022 | Reaudit |

### Network
Ethereum (ERC20)

### Website
https://www.utribe.one/

### Twitter
https://twitter.com/utribeone

### Facebook
https://www.utribe.one/

### Instagram
https://instagram.com/ubuntu.coin

### LinkedIn
https://linkedin.com/company/utribeone

### Youtube
https://www.youtube.com/channel/UCZp1v9UrM_wgDirC_9bjLbA

## Description

With Ubuntu Tribe, people can reclaim control over their wealth and multiply it, contributing to the wellbeing of all

## Project Engagement

During the 21st of February 2022, **Ubuntu Tribe Team** engaged Solidproof.io to audit smart contracts that they created. The engagement was technical in nature and focused on identifying security flaws in the design and implementation of the contracts. They provided Solidproof.io with access to their code repository and whitepaper.

## Logo

## Contract Link

### v1.0

- Gitlab
    - https://gitlab.com/fluidefi1/utribe/-/tree/gift-erc20-token/contracts/gift-erc20-token
    - Commit: 1ca3325e065a3230f3697d4f1af38ee496f259f9

### v1.1

- Gitlab
    - https://gitlab.com/fluidefi1/utribe/-/tree/gift-erc20-token/contracts/gift-erc20-token
    - Commit: b7560815c7c8915674a1637caded5c2266c4835f

# Vulnerability & Risk Level

Risk represents the probability that a certain source-threat will exploit vulnerability, and the impact of that event on the organization or system. Risk Level is computed based on CVSS version 3.0.

| Level | Value | Vulnerability | Risk (Required Action) |
|---|---|---|---|
| **Critical** | 9 - 10 | A vulnerability that can disrupt the contract functioning in a number of scenarios, or creates a risk that the contract may be broken. | Immediate action to reduce risk level. |
| **High** | 7 – 8.9 | A vulnerability that affects the desired outcome when using a contract, or provides the opportunity to use a contract in an unintended way. | Implementation of corrective actions as soon aspossible. |
| **Medium** | 4 – 6.9 | A vulnerability that could affect the desired outcome of executing the contract in a specific scenario. | Implementation of corrective actions in a certain period. |
| **Low** | 2 – 3.9 | A vulnerability that does not have a significant impact on possible scenarios for the use of the contract and is probably subjective. | Implementation of certain corrective actions or accepting the risk. |
| **Informational** | 0 – 1.9 | A vulnerability that have informational character but is not effecting any of the code. | An observation that does not determine a level of risk |

# Auditing Strategy and Techniques Applied

Throughout the review process, care was taken to evaluate the repository for security-related issues, code quality, and adherence to specification and best practices. To do so, reviewed line-by-line by our team of expert pentesters and smart contract developers, documenting any issues as there were discovered.

## Methodology

The auditing process follows a routine series of steps:

1. Code review that includes the following:
    i) Review of the specifications, sources, and instructions provided to SolidProof to make sure we understand the size, scope, and functionality of the smart contract.
    ii) Manual review of code, which is the process of reading source code line-by-line in an attempt to identify potential vulnerabilities.
    iii) Comparison to specification, which is the process of checking whether the code does what the specifications, sources, and instructions provided to SolidProof describe.

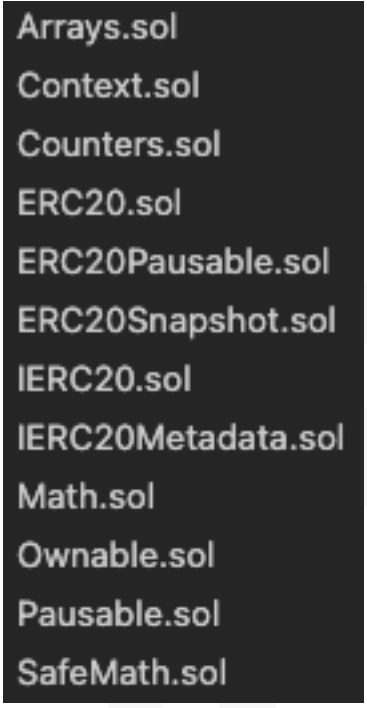
2. Testing and automated analysis that includes the following:
    i) Test coverage analysis, which is the process of determining whether the test cases are actually covering the code and how much code is exercised when we run those test cases.
    ii) Symbolic execution, which is analysing a program to determine what inputs causes each part of a program to execute.

3. Best practices review, which is a review of the smart contracts to improve efficiency, effectiveness, clarify, maintainability, security, and control based on the established industry and academic practices, recommendations, and research.

4. Specific, itemized, actionable recommendations to help you take steps to secure your smart contracts.

# Used Code from other Frameworks/Smart Contracts (direct imports)

Imported packages:



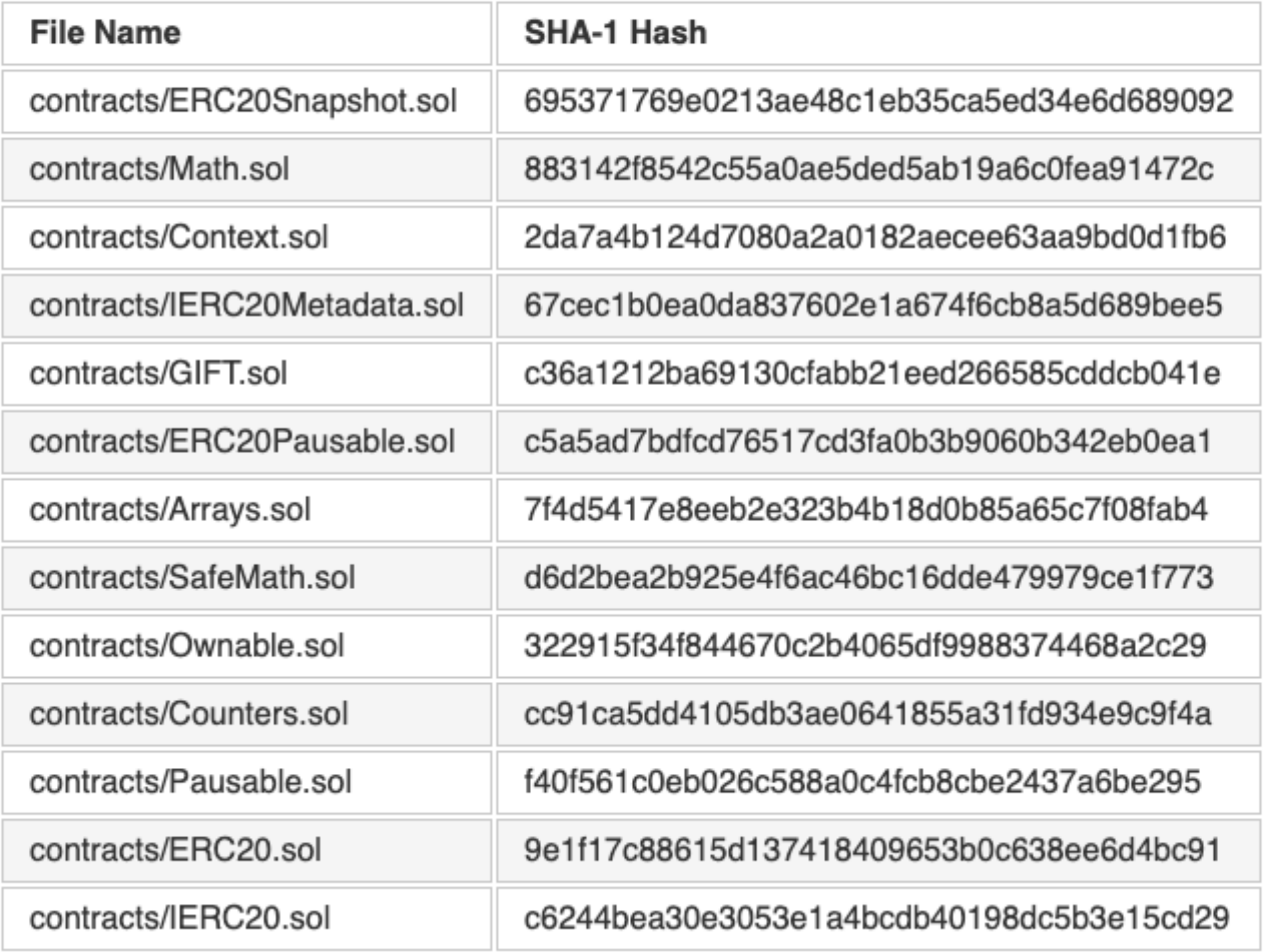
```
Arrays.sol
Context.sol
Counters.sol
ERC20.sol
ERC20Pausable.sol
ERC20Snapshot.sol
IERC20.sol
IERC20Metadata.sol
Math.sol
Ownable.sol
Pausable.sol
SafeMath.sol
```

# Tested Contract Files

This audit covered the following files listed below with a SHA-1 Hash.

*A file with a different Hash has been modified, intentionally or otherwise, after the security review. A different Hash could be (but not necessarily) an indication of a changed condition or potential vulnerability that was not within the scope of this review.*

## v1.0

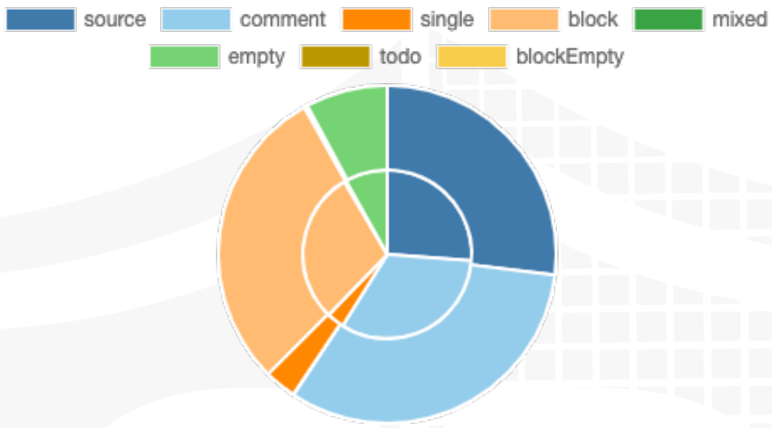


| File Name | SHA-1 Hash |
|---|---|
| contracts/ERC20Snapshot.sol | 695371769e0213ae48c1eb35ca5ed34e6d689092 |
| contracts/Math.sol | 883142f8542c55a0ae5ded5ab19a6c0fea91472c |
| contracts/Context.sol | 2da7a4b124d7080a2a0182aecee63aa9bd0d1fb6 |
| contracts/IERC20Metadata.sol | 67cec1b0ea0da837602e1a674f6cb8a5d689bee5 |
| contracts/GIFT.sol | c36a1212ba69130cfabb21eed266585cddcb041e |
| contracts/ERC20Pausable.sol | c5a5ad7bdfcd76517cd3fa0b3b9060b342eb0ea1 |
| contracts/Arrays.sol | 7f4d5417e8eeb2e323b4b18d0b85a65c7f08fab4 |
| contracts/SafeMath.sol | d6d2bea2b925e4f6ac46bc16dde479979ce1f773 |
| contracts/Ownable.sol | 322915f34f844670c2b4065df9988374468a2c29 |
| contracts/Counters.sol | cc91ca5dd4105db3ae0641855a31fd934e9c9f4a |
| contracts/Pausable.sol | f40f561c0eb026c588a0c4fcb8cbe2437a6be295 |
| contracts/ERC20.sol | 9e1f17c88615d137418409653b0c638ee6d4bc91 |
| contracts/IERC20.sol | c6244bea30e3053e1a4bcdb40198dc5b3e15cd29 |

# Metrics

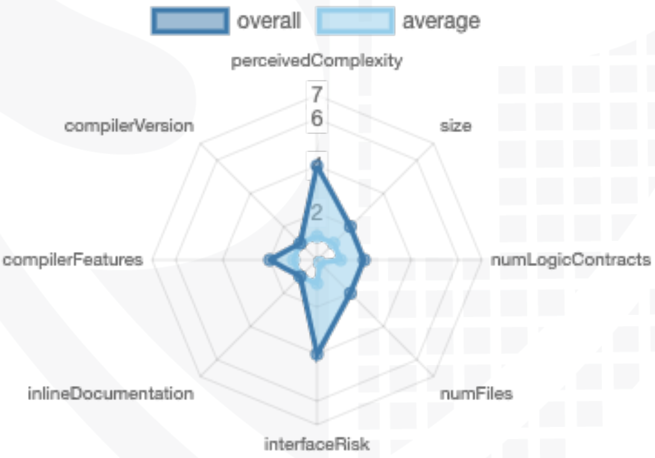
## Source Lines

### v1.0



## Risk Level

### v1.0



# Capabilities

## Components

| Version | Contracts | Libraries | Interfaces | Abstract |
|---|---|---|---|---|
| 1.0 | 2 | 4 | 2 | 5 |

## Exposed Functions

*This section lists functions that are explicitly declared public or payable. Please note that getter methods for public stateVars are not included.*

| Version | Public | Payable |
|---|---|---|
| 1.0 | 40 | 0 |

| Version | External | Internal | Private | Pure | View |
|---|---|---|---|---|---|
| 1.0 | 9 | 86 | 5 | 17 | 24 |

## State Variables

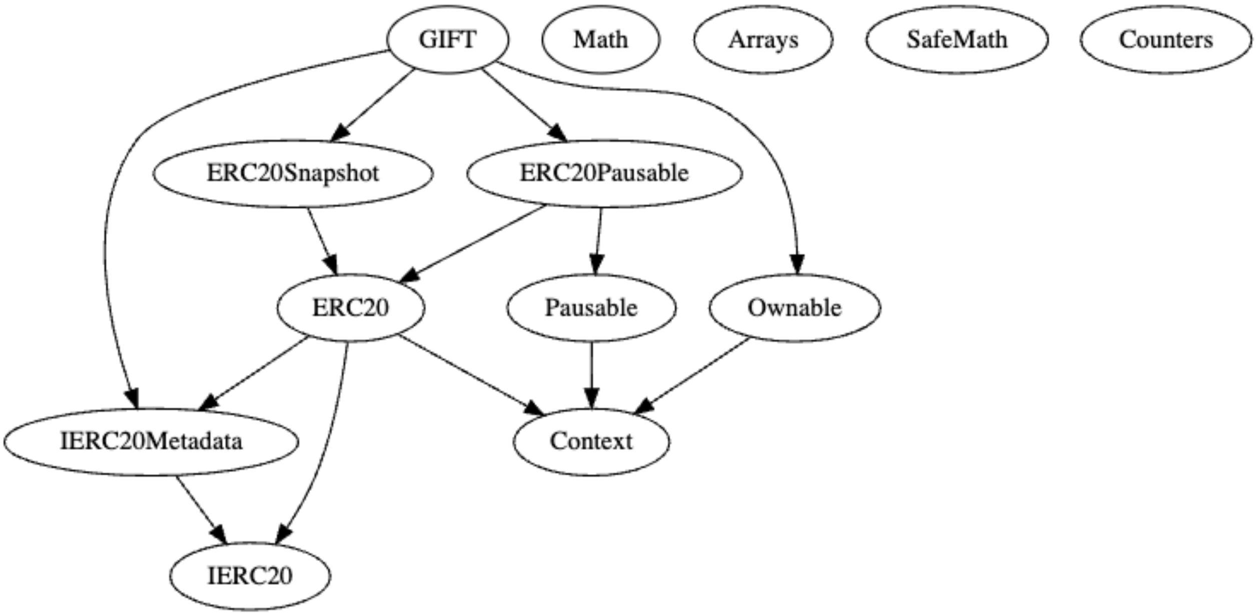
| Version | Total | Public |
|---|---|---|
| 1.0 | 23 | 13 |

## Capabilities

| Version | Solidity Versions observed | Experimental Features | Can Receive Funds | Uses Assembly | Has Destroyable Contracts |
|---|---|---|---|---|---|
| 1.0 | ^0.8.4 | | | | |

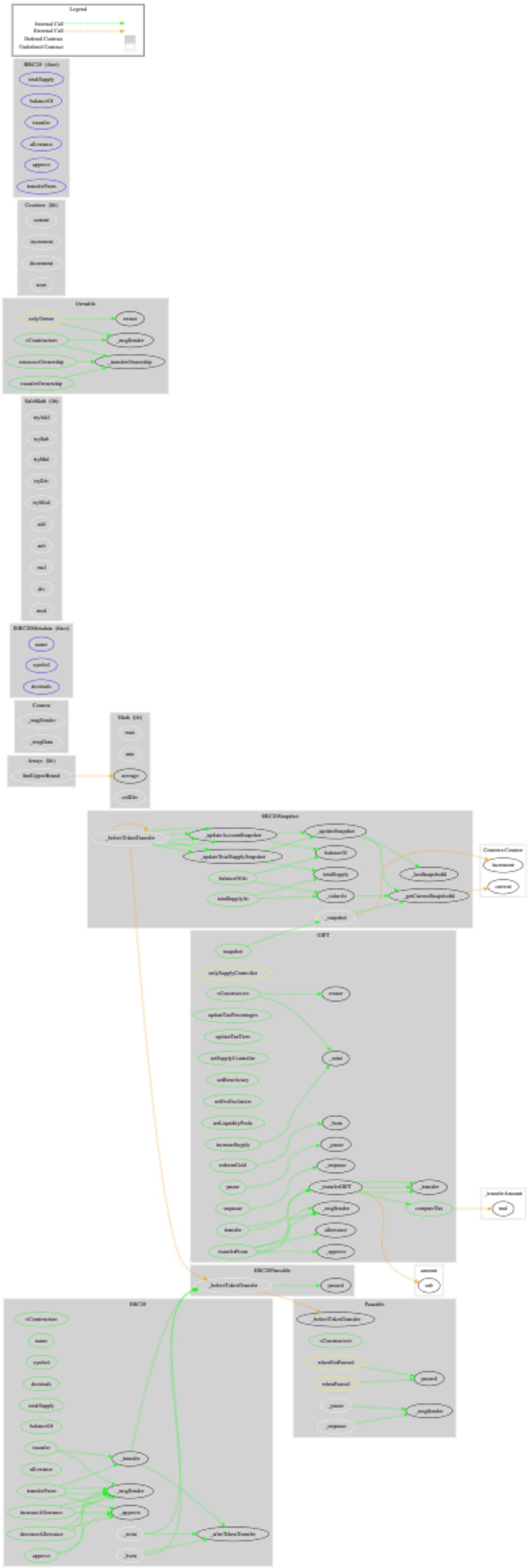
# Inheritance Graph

## v1.0



# CallGraph

## v1.0



# Scope of Work/Verify Claims

The above token Team provided us with the files that needs to be tested (Github, Bscscan, Etherscan, files, etc.). The scope of the audit is the main contract (usual the same name as team appended with .sol).

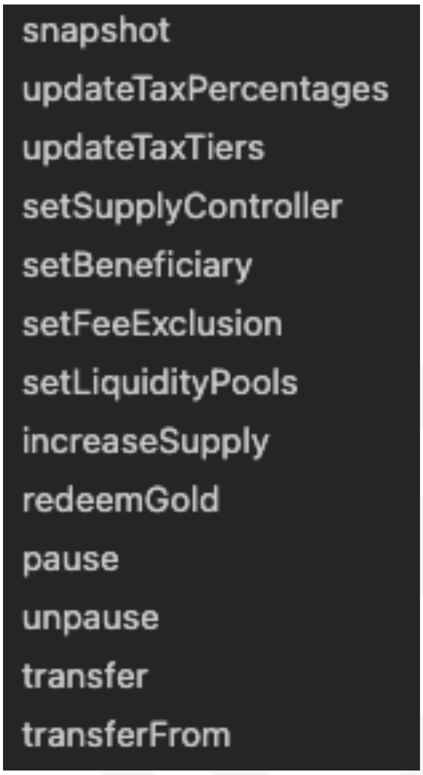
We will verify the following claims:

1. Correct implementation of Token standard
2. Deployer cannot mint any new tokens
3. Deployer cannot burn or lock user funds
4. Deployer cannot pause the contract
5. Overall checkup (Smart Contract Security)

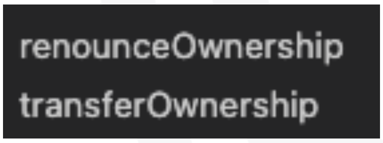
## Correct implementation of Token standard

| Function | Description | Exist | Tested | Verified |
|---|---|---|---|---|
| TotalSupply | provides information about the total token supply | ✓ | ✓ | ✓ |
| BalanceOf | provides account balance of the owner's account | ✓ | ✓ | ✓ |
| Transfer | executes transfers of a specified number of tokens to a specified address | ✓ | ✓ | ✓ |
| TransferFrom | executes transfers of a specified number of tokens from a specified address | ✓ | ✓ | ✓ |
| Approve | allow a spender to withdraw a set number of tokens from a specified account | ✓ | ✓ | ✓ |
| Allowance | returns a set number of tokens from a spender to the owner | ✓ | ✓ | ✓ |

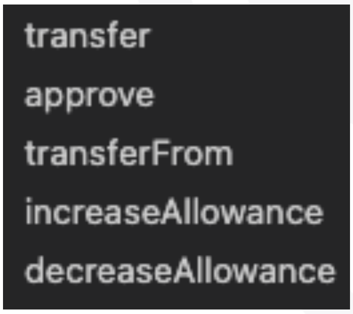
## Write functions of contract v1.0



snapshot
updateTaxPercentages
updateTaxTiers
setSupplyController
setBeneficiary
setFeeExclusion
setLiquidityPools
increaseSupply
redeemGold
pause
unpause
transfer
transferFrom



renounceOwnership
transferOwnership



transfer
approve
transferFrom
increaseAllowance
decreaseAllowance

## Deployer cannot mint any new tokens

| Name | Exist | Tested | Status |
|---|---|---|---|
| Deployer cannot mint | ✓ | ✓ | ✗ |
| Max / Total Supply | 500.000.000 | | |

Comments:

### v1.0

- Only supply controller can mint tokens itself with increaseSupply function L160 GIFT.sol

## Deployer cannot burn or lock user funds

| Name | Exist | Tested | Status |
|---|---|---|---|
| Deployer cannot lock | ✓ | ✓ | ✗ |
| Deployer cannot burn | ✓ | ✓ | ✗ |

Comments:

### v1.0

- Only supply controller can burn tokens for a certain address without permission with redeemGold function L168 GIFT.sol
- Deployer can lock user funds by pausing the contract

## Deployer cannot pause the contract

| Name | Exist | Tested | Status |
|---|---|---|---|
| Deployer cannot pause | ✓ | ✓ | ✗ |

Comments:

### v1.0

- Only owner can enable/disable pause

## Overall checkup (Smart Contract Security)

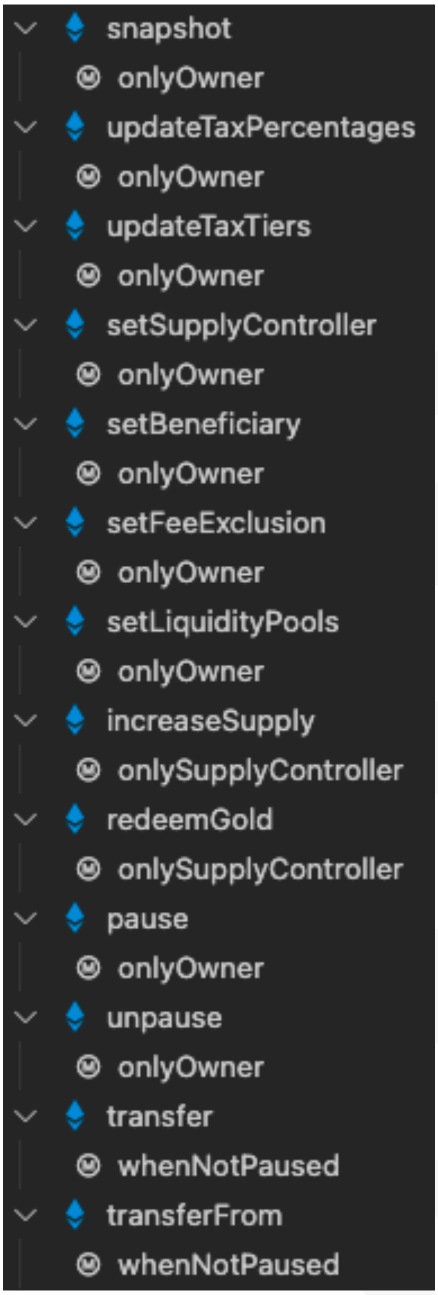
| Tested | Verified |
|---|---|
| ✓ | ✓ |

### Legend

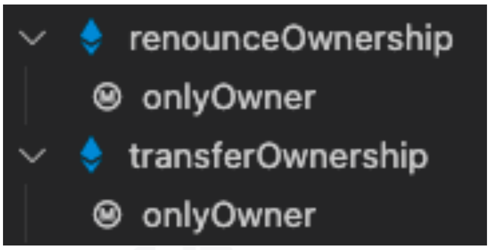
| Attribute | Symbol |
|---|---|
| Verfified / Checked | ✓ |
| Partly Verified | ⚑ |
| Unverified / Not checked | ✗ |
| Not available | – |

# Modifiers and public functions

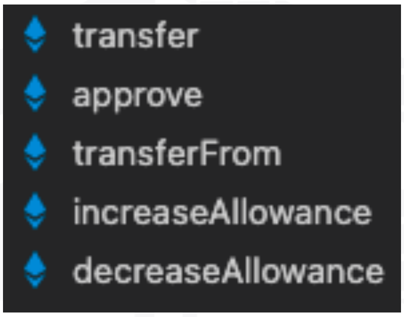
## v1.0



```
snapshot
    onlyOwner
updateTaxPercentages
    onlyOwner
updateTaxTiers
    onlyOwner
setSupplyController
    onlyOwner
setBeneficiary
    onlyOwner
setFeeExclusion
    onlyOwner
setLiquidityPools
    onlyOwner
increaseSupply
    onlySupplyController
redeemGold
    onlySupplyController
pause
    onlyOwner
unpause
    onlyOwner
transfer
    whenNotPaused
transferFrom
    whenNotPaused
```



```
renounceOwnership
    onlyOwner
transferOwnership
    onlyOwner
```



```
transfer
approve
transferFrom
increaseAllowance
decreaseAllowance
```

## Comments

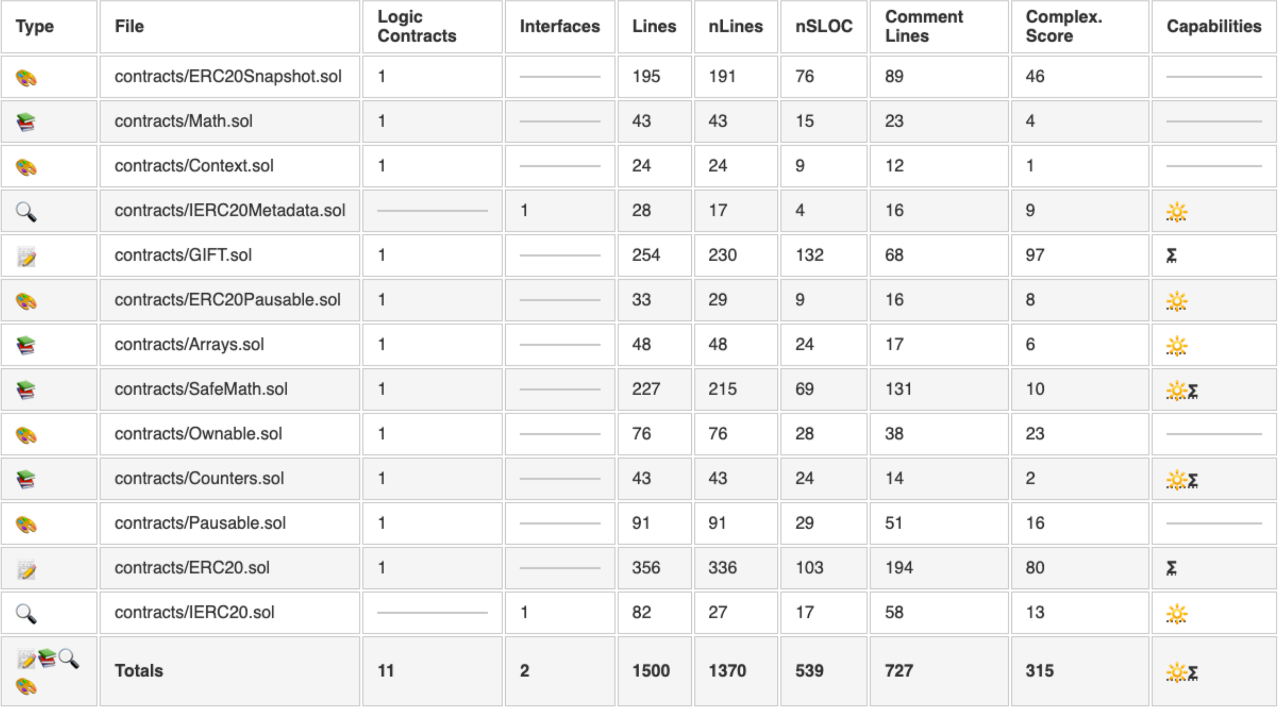
- Deployer can set following state variables without any limitations
  - tierOneTaxPercentage
  - tierTwoTaxPercentage
  - tierThreeTaxPercentage
  - tierFourTaxPercentage
  - tierFiveTaxPercentage
  - tierOneMax
  - tierTwoMax
  - tierThreeMax
  - tierFourMax
- Deployer can enable/disable following state variables
  - _isExcludedFromFees
  - _isLiquidityPool[_liquidityPool]
  - _paused

- Deployer can set following addresses
  - supplyController
  - beneficiary

**Please check if an OnlyOwner or similar restrictive modifier has been forgotten.**

# Source Units in Scope

## v1.0



| Type | File | Logic Contracts | Interfaces | Lines | nLines | nSLOC | Comment Lines | Complex. Score | Capabilities |
|---|---|---|---|---|---|---|---|---|---|
| 🎨 | contracts/ERC20Snapshot.sol | 1 | — | 195 | 191 | 76 | 89 | 46 | — |
| 📚 | contracts/Math.sol | 1 | — | 43 | 43 | 15 | 23 | 4 | — |
| 🎨 | contracts/Context.sol | 1 | — | 24 | 24 | 9 | 12 | 1 | — |
| 🔍 | contracts/IERC20Metadata.sol | — | 1 | 28 | 17 | 4 | 16 | 9 | 🌞 |
| 📝 | contracts/GIFT.sol | 1 | — | 254 | 230 | 132 | 68 | 97 | Σ |
| 🎨 | contracts/ERC20Pausable.sol | 1 | — | 33 | 29 | 9 | 16 | 8 | 🌞 |
| 📚 | contracts/Arrays.sol | 1 | — | 48 | 48 | 24 | 17 | 6 | 🌞 |
| 📚 | contracts/SafeMath.sol | 1 | — | 227 | 215 | 69 | 131 | 10 | 🌞Σ |
| 🎨 | contracts/Ownable.sol | 1 | — | 76 | 76 | 28 | 38 | 23 | — |
| 📚 | contracts/Counters.sol | 1 | — | 43 | 43 | 24 | 14 | 2 | 🌞Σ |
| 🎨 | contracts/Pausable.sol | 1 | — | 91 | 91 | 29 | 51 | 16 | — |
| 📝 | contracts/ERC20.sol | 1 | — | 356 | 336 | 103 | 194 | 80 | Σ |
| 🔍 | contracts/IERC20.sol | — | 1 | 82 | 27 | 17 | 58 | 13 | 🌞 |
| 📝📚🔍🎨 | **Totals** | **11** | **2** | **1500** | **1370** | **539** | **727** | **315** | 🌞Σ |

## Legend

| Attribute | Description |
|---|---|
| Lines | total lines of the source unit |
| nLines | normalized lines of the source unit (e.g. normalizes functions spanning multiple lines) |
| nSLOC | normalized source lines of code (only source-code lines; no comments, no blank lines) |
| Comment Lines | lines containing single or block comments |
| Complexity Score | a custom complexity score derived from code statements that are known to introduce code complexity (branches, loops, calls, external interfaces, ...) |

# Audit Results

## AUDIT PASSED

### Critical issues

**No critical issues**

### High issues

**No high issues**

### Medium issues

**No medium issues**

### Low issues

| Issue | File | Type | Line | Description |
|---|---|---|---|---|
| #1 | Main | Contract doesn’t import npm packages from source (like OpenZeppelin etc.) | - | We recommend to import all packages from npm directly without flatten the contract. Functions could be modified or can be susceptible to vulnerabilities |

### Informational issues

**No infromational issues**

## Commented Code exist

There are some instances of code being commented out in the following files that should be removed:

| File | Line | Comment |
|---|---|---|
| Math | 29 | // (a + b) / 2 can overflow. |
|  | 40 | // (a + b - 1) / b can overflow on addition, so we distribute. |

### Recommendation

Remove the commented code, or address them properly.

## Audit Comments

We recommend you to use the special form of comments (NatSpec Format, Follow link for more information https://docs.soliditylang.org/en/v0.5.10/natspec-format.html) for your contracts to provide rich documentation for functions, return variables and more. This helps investors to make clear what that variables, functions etc. do.

### 25. February 2022:

- OpenZeppelin Contracts Version used 4.4.1. This branch is 9 commits ahead, 121 commits behind master.
- Read whole report for more information

## Unit Testing

```
Contract: GIFT
  ✓ checking if totalSupply returns total token supply
  ✓ updateTaxPercentages: checking that non owner cannot call onlyOwner modified function (666ms)
  ✓ updateTaxPercentages: checking that tax percentages get updated (92ms)
  ✓ updateTaxTiers: checking that non owner cannot call onlyOwner modified function (77ms)
  ✓ updateTaxTiers: checking that tax tiers get updated (90ms)
  ✓ setSupplyController: checking that non owner cannot call onlyOwner modified function (41ms)
  ✓ setSupplyController: checking that supplyController cannot be set to zero address (101ms)
  ✓ setSupplyController: checking that supplyController state variable gets set to expected address (62ms)
  ✓ setBeneficiary: checking that non owner cannot call onlyOwner modified function (78ms)
  ✓ setBeneficiary: checking that beneficiary cannot be set to zero address
  ✓ setBeneficiary: checking that beneficiary state variable gets set to expected address (102ms)
  ✓ setFeeExclusion: checking that non owner cannot call onlyOwner modified function (45ms)
  ✓ setFeeExclusion: checking if address gets set to be excluded from fee (137ms)
  ✓ setLiquidityPools: checking that non owner cannot call onlyOwner modified function (38ms)
  ✓ setLiquidityPools: checking if address gets set as a liquidity pool (82ms)
  ✓ increaseSupply: checking that non supplyController cannot call onlySupplyController modified function (92ms)
  ✓ increaseSupply: checking that it emits a Transfer event from zero address on successful call
  ✓ redeemGold: checking that non supplyController cannot call onlySupplyController modified function (129ms)
  ✓ redeemGold: checking that it emits a Transfer event to zero address on successful call
  ✓ pause: checking that non owner cannot call onlyOwner modified function (40ms)
  ✓ pause: checking that you cannot call pause function when contract is already paused (173ms)
  ✓ pause: checking that it emits a Paused event on successful call (48ms)
  ✓ unpause: checking that non owner cannot call onlyOwner modified function (57ms)
  ✓ unpause: checking that you cannot call unpause function when contract is already unpaused (213ms)
  ✓ unpause: checking that it emits a Unpaused event on successful call (126ms)
  ✓ snapshot: checking that non owner cannot call onlyOwner modified function (74ms)
  ✓ snapshot: checking that values are recorded when snapshot function is called (508ms)
  ✓ transfer: checking that you cannot call transfer when contract is paused (70ms)
  ✓ transfer: checking that you cannot call transfer to zero address (99ms)
  ✓ transfer: checking that you cannot transfer more than available balance (159ms)
  ✓ transfer: checking that it emits Transfer event on successful call (77ms)
  ✓ transfer: checking that it emits additional Transfer event to beneficiary on successful call (271ms)
```

## SWC Attacks

| ID | Title | Relationships | Status |
|---|---|---|---|
| SWC-136 | Unencrypted Private Data On-Chain | CWE-767: Access to Critical Private Variable via Public Method | PASSED |
| SWC-135 | Code With No Effects | CWE-1164: Irrelevant Code | PASSED |
| SWC-134 | Message call with hardcoded gas amount | CWE-655: Improper Initialization | PASSED |
| SWC-133 | Hash Collisions With Multiple Variable Length Arguments | CWE-294: Authentication Bypass by Capture-replay | PASSED |
| SWC-132 | Unexpected Ether balance | CWE-667: Improper Locking | PASSED |
| SWC-131 | Presence of unused variables | CWE-1164: Irrelevant Code | PASSED |
| SWC-130 | Right-To-Left-Override control character (U+202E) | CWE-451: User Interface (UI) Misrepresentation of Critical Information | PASSED |
| SWC-129 | Typographical Error | CWE-480: Use of Incorrect Operator | PASSED |
| SWC-128 | DoS With Block Gas Limit | CWE-400: Uncontrolled Resource Consumption | PASSED |

|  |  |  |  |
|---|---|---|---|
| SWC-127 | Arbitrary Jump with Function Type Variable | CWE-695: Use of Low-Level Functionality | PASSED |
| SWC-125 | Incorrect Inheritance Order | CWE-696: Incorrect Behavior Order | PASSED |
| SWC-124 | Write to Arbitrary Storage Location | CWE-123: Write-what-where Condition | PASSED |
| SWC-123 | Requirement Violation | CWE-573: Improper Following of Specification by Caller | PASSED |
| SWC-122 | Lack of Proper Signature Verification | CWE-345: Insufficient Verification of Data Authenticity | PASSED |
| SWC-121 | Missing Protection against Signature Replay Attacks | CWE-347: Improper Verification of Cryptographic Signature | PASSED |
| SWC-120 | Weak Sources of Randomness from Chain Attributes | CWE-330: Use of Insufficiently Random Values | PASSED |
| SWC-119 | Shadowing State Variables | CWE-710: Improper Adherence to Coding Standards | PASSED |
| SWC-118 | Incorrect Constructor Name | CWE-665: Improper Initialization | PASSED |
| SWC-117 | Signature Malleability | CWE-347: Improper Verification of Cryptographic Signature | PASSED |

| | | | |
|---|---|---|---|
| SWC-116 | Timestamp Dependence | CWE-829: Inclusion of Functionality from Untrusted Control Sphere | PASSED |
| SWC-115 | Authorization through tx.origin | CWE-477: Use of Obsolete Function | PASSED |
| SWC-114 | Transaction Order Dependence | CWE-362: Concurrent Execution using Shared Resource with Improper Synchronization ('Race Condition') | PASSED |
| SWC-113 | DoS with Failed Call | CWE-703: Improper Check or Handling of Exceptional Conditions | PASSED |
| SWC-112 | Delegatecall to Untrusted Callee | CWE-829: Inclusion of Functionality from Untrusted Control Sphere | PASSED |
| SWC-111 | Use of Deprecated Solidity Functions | CWE-477: Use of Obsolete Function | PASSED |
| SWC-110 | Assert Violation | CWE-670: Always-Incorrect Control Flow Implementation | PASSED |
| SWC-109 | Uninitialized Storage Pointer | CWE-824: Access of Uninitialized Pointer | PASSED |
| SWC-108 | State Variable Default Visibility | CWE-710: Improper Adherence to Coding Standards | PASSED |
| SWC-107 | Reentrancy | CWE-841: Improper Enforcement of Behavioral Workflow | PASSED |
| SWC-106 | Unprotected SELFDESTRUCT Instruction | CWE-284: Improper Access Control | PASSED |

|  |  |  |  |
|---|---|---|---|
| SWC-105 | Unprotected Ether Withdrawal | CWE-284: Improper Access Control | PASSED |
| SWC-104 | Unchecked Call Return Value | CWE-252: Unchecked Return Value | PASSED |
| SWC-103 | Floating Pragma | CWE-664: Improper Control of a Resource Through its Lifetime | PASSED |
| SWC-102 | Outdated Compiler Version | CWE-937: Using Components with Known Vulnerabilities | PASSED |
| SWC-101 | Integer Overflow and Underflow | CWE-682: Incorrect Calculation | PASSED |
| SWC-100 | Function Default Visibility | CWE-710: Improper Adherence to Coding Standards | PASSED |

Solid Proofed

**Blockchain Security | Smart Contract Audits | KYC**

MADE IN GERMANY