QuillAudits

Audit Report
March, 2022

For

GAMEYOO

Contents

Scope of the Audit

The scope of this audit was to analyze and document the Gameyoo programs codebase for quality, security, and correctness.

Checked Vulnerabilities

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

- Missing signer checks
- Missing ownership checks
- Missing rent exemption checks
- Signed invocation of unverified programs
- Solana account confusions
- Re-initiation with cross-instance confusion
- Arithmetic overflow/underflows
- Numerical precision errors
- Loss of precision in calculation
- Incorrect calculation
- Casting truncation
- Exponential complexity in calculation
- Missing freeze authority checks
- Insufficient SPL-Token account verification
- Over/under payment of loans
- Reentrancy
- Unsafe Rust code
- Outdated dependencies
- Redundant code

Techniques and Methods

Throughout the audit of smart contract, care was taken to ensure:

- The overall quality of code.
- Use of best practices.
- Code documentation and comments match logic and expected behaviour.
- Token distribution and calculations are as per the intended behaviour mentioned in the whitepaper.
- Implementation of spl-token standards.
- Efficient use of gas.
- Code is safe from re-entrancy and other vulnerabilities.

The following techniques, methods and tools were used to review all the smart contracts.

Structural Analysis
In this step, we have analysed the design patterns and structure of smart contracts. A thorough check was done to ensure the smart contract is structured in a way that will not result in future problems.

Static Analysis
Static analysis of smart contracts was done to identify contract vulnerabilities. In this step, a series of automated tools are used to test the security of smart contracts.

Code Review / Manual Analysis
Manual analysis or review of code was done to identify new vulnerabilities or verify the vulnerabilities found during the static analysis. Contracts were completely manually analysed, their logic was checked and compared with the one described in the whitepaper. Besides, the results of the automated analysis were manually verified.

Gas Consumption
In this step, we have checked the behaviour of smart contracts in production. Checks were done to know how much gas gets consumed and the possibilities of optimization of code to reduce gas consumption.

Issue Categories

Every issue in this report has been assigned to a severity level. There are four levels of severity, and each of them has been explained below.

Risk-level	Description
High	A high severity issue or vulnerability means that your smart contract can be exploited. Issues on this level are critical to the smart contract's performance or functionality, and we recommend these issues be fixed before moving to a live environment.
Medium	The issues marked as medium severity usually arise because of errors and deficiencies in the smart contract code. Issues on this level could potentially bring problems, and they should still be fixed.
Low	Low-level severity issues can cause minor impact and or are just warnings that can remain unfixed for now. It would be better to fix these issues at some point in the future.
Informational	These are severity issues that indicate an improvement request, a general question, a cosmetic or documentation error, or a request for information. There is low-to-no impact.

Number of issues per severity

Type	High	Medium	Low	Informational
Open	0	0	0	0
Acknowledged	0	0	0	0
Closed	0	0	1	0

Introduction

During the period of **March 14, 2022, to March 18, 2022** - QuillAudits Team performed a security audit for Gameyoo programs.

The code for the audit was taken from the repository of Gameyo:
https://github.com/gameyoo/token-faucet

V	Date	Commit Hash
1	March	ac4184a7941a9367bbaf6571cb882dd6a9b2fbb2
2	March	700a2d94a70c25391c49aac5537d76b0a0e0c194

Issues Found – Code Review / Manual Testing

A. Program – token-faucet

High severity issues

No issues were found.

Medium severity issues

No issues were found.

Low severity issues

1. **Missing address verification**

```
lib.rs - Line 282:
    /// The associated token account of recipient for ecosystem.
    pub receiver_ecosystem: AccountInfo<'info>,
    /// The associated token account of recipient for GYC staking.
    pub receiver_gyc_staking: AccountInfo<'info>,
    /// System program.
    pub system_program: Program<'info, System>,
    /// Clock represents network time.
    pub clock: Sysvar<'info, Clock>,
    /// Rent for rent exempt.
    pub rent: Sysvar<'info, Rent>,
}
```

Description

Certain instructions lack a safety check in the account addresses, accounts that are passed to the instruction should all be verified, otherwise, the program's functionality may become inaccessible.

Remediation

It's recommended to verify the system account address that is provided to the instructions using the following account constraint
#[account(address = system_program::ID)]

Status: Fixed

The system_program account address has been verified along with checks for the sysvar clock and sysvar rent account addresses in the commit 700a2d94a70c25391c49aac5537d76b0a0e0c194

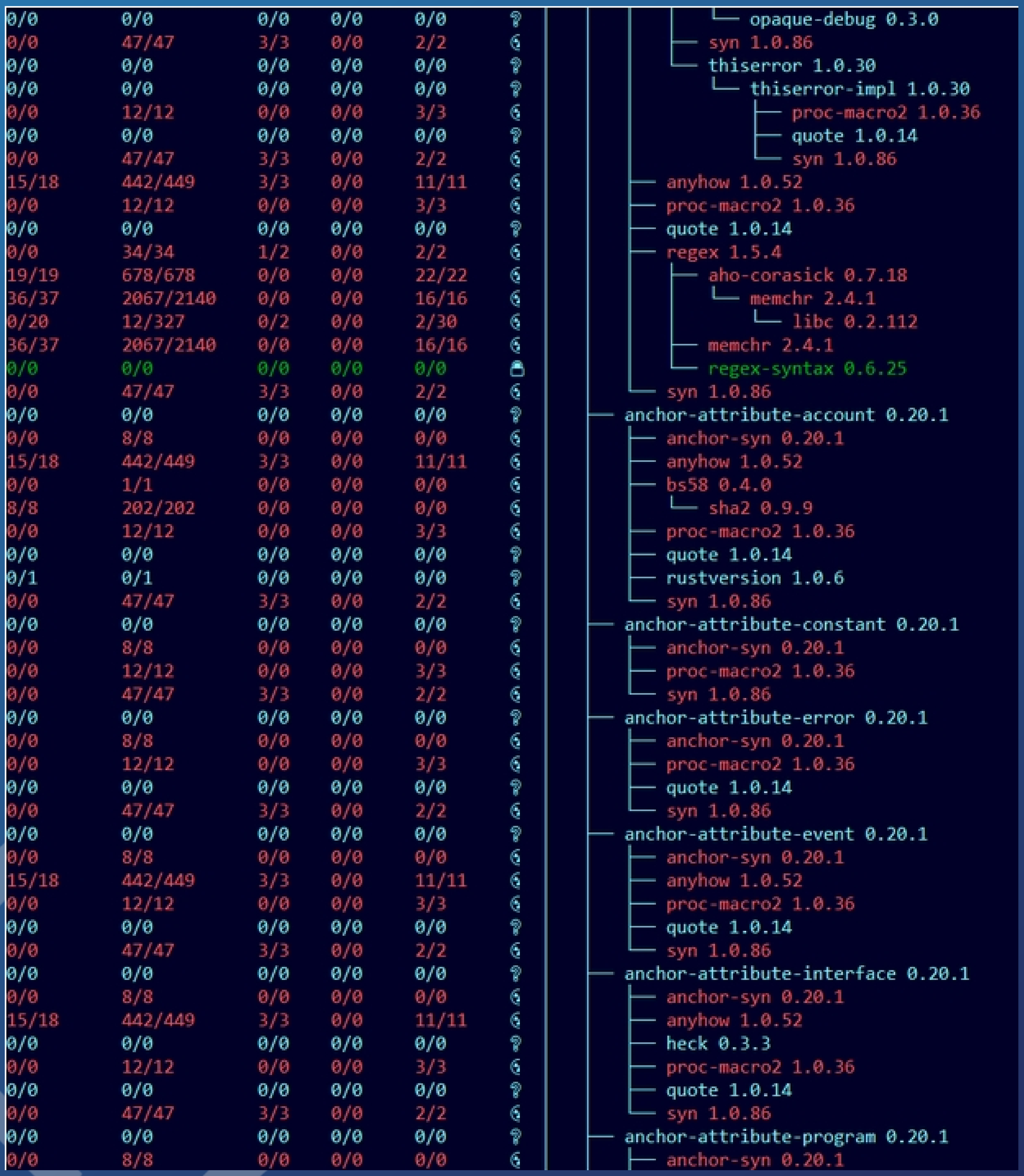
Automated Tests

Soteria

```
 - ⬙ [00m:00s] Loading IR From File
 - ⬚ [00m:00s] Running Compiler Optimization Passes
EntryPoints:
entrypoint
 - ⬙ [00m:00s] Running Compiler Optimization Passes
 - ⬙ [00m:00s] Running Pointer Analysis
 - ⬙ [00m:00s] Building Static Happens-Before Graph
 - ⬙ [00m:00s] Detecting Vunerabilities
detected 0 untrustful accounts in total.
detected 0 unsafe math operations in total.

Analyzing /root/token-faucet-master/.coderrect/build/bpfel-unknown-unknown/release/deps/typenum-6788683e3de7b699.ll ...

Analyzing /root/token-faucet-master/.coderrect/build/bpfel-unknown-unknown/release/deps/uint-9ef4374e28721932.ll ...

--------The summary of potential vulnerabilities in token_faucet.ll--------

        No vulnerabilities detected
```

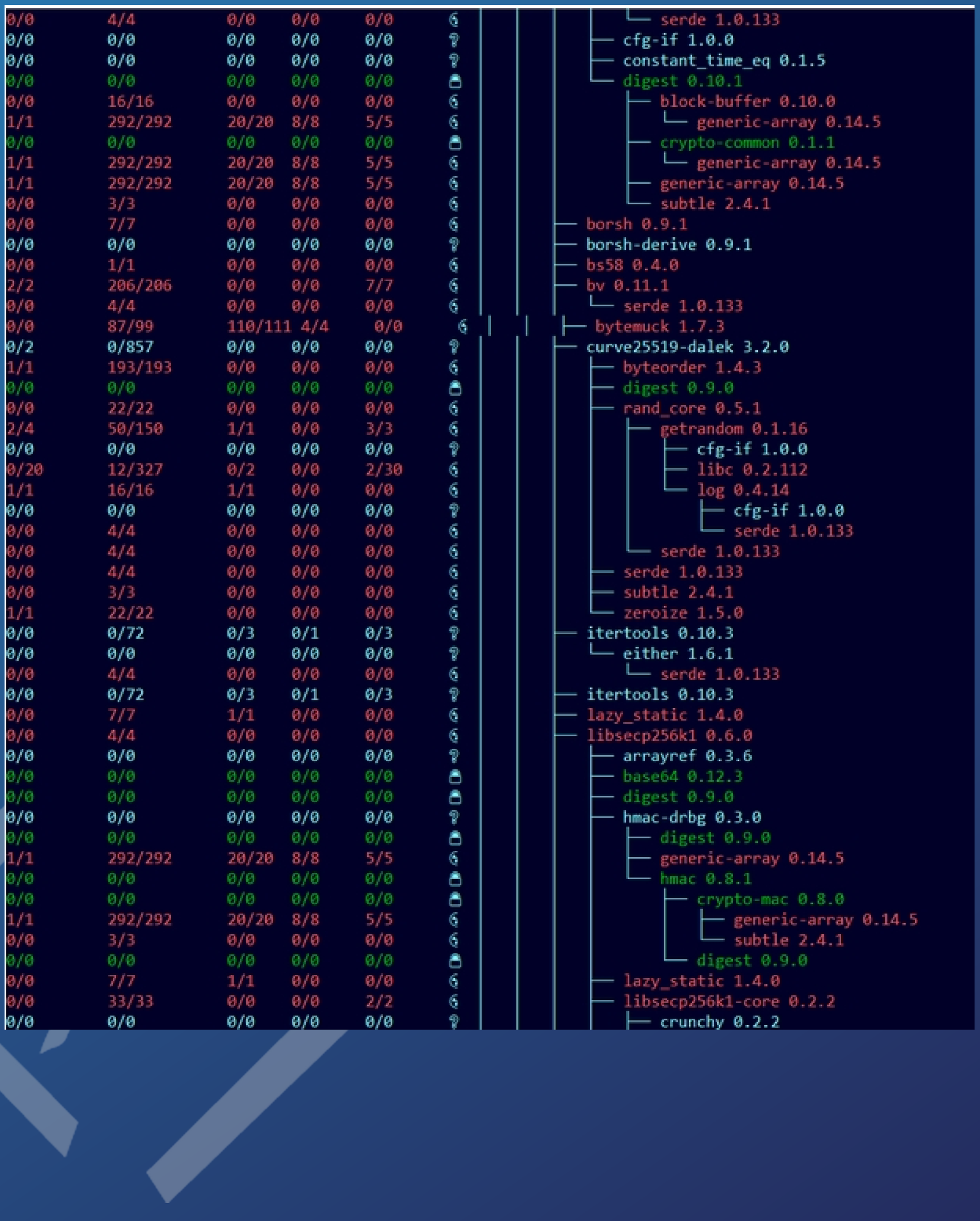
Cargo geiger

```
Metric output format: x/y
    x = unsafe code used by the build
    y = total unsafe code found in the crate

Symbols:
    🔒   = No `unsafe` usage found, declares #![forbid(unsafe_code)]
    ❓   = No `unsafe` usage found, missing #![forbid(unsafe_code)]
    ☢   = `unsafe` usage found

Functions  Expressions  Impls  Traits  Methods  Dependency

0/0        1/1          0/0    0/0     0/0      ☢  token-faucet 0.1.0
0/0        0/0          0/0    0/0     0/0      ❓  ├── anchor-lang 0.20.1
0/0        0/0          0/0    0/0     0/0      ❓  │   ├── anchor-attribute-access-control 0.20.1
0/0        8/8          0/0    0/0     0/0      ☢  │   │   ├── anchor-syn 0.20.1
15/18      442/449      3/3    0/0     11/11    ☢  │   │   │   ├── anyhow 1.0.52
0/0        1/1          0/0    0/0     0/0      ☢  │   │   │   ├── bs58 0.3.1
0/0        0/0          0/0    0/0     0/0      ❓  │   │   │   ├── heck 0.3.3
0/0        0/0          0/0    0/0     0/0      ❓  │   │   │   │   └── unicode-segmentation 1.8.0
0/0        12/12        0/0    0/0     3/3      ☢  │   │   │   ├── proc-macro2 1.0.36
0/0        0/0          0/0    0/0     0/0      🔒  │   │   │   │   └── unicode-xid 0.2.2
0/0        0/0          0/0    0/0     0/0      ❓  │   │   │   ├── proc-macro2-diagnostics 0.9.1
0/0        12/12        0/0    0/0     3/3      ☢  │   │   │   │   ├── proc-macro2 1.0.36
0/0        0/0          0/0    0/0     0/0      ❓  │   │   │   │   ├── quote 1.0.14
0/0        12/12        0/0    0/0     3/3      ☢  │   │   │   │   │   └── proc-macro2 1.0.36
0/0        47/47        3/3    0/0     2/2      ☢  │   │   │   │   ├── syn 1.0.86
0/0        12/12        0/0    0/0     3/3      ☢  │   │   │   │   │   ├── proc-macro2 1.0.36
0/0        0/0          0/0    0/0     0/0      ❓  │   │   │   │   │   ├── quote 1.0.14
0/0        0/0          0/0    0/0     0/0      🔒  │   │   │   │   │   └── unicode-xid 0.2.2
3/3        34/34        0/0    0/0     0/0      ☢  │   │   │   │   └── yansi 0.5.0
0/0        0/0          0/0    0/0     0/0      ❓  │   │   │   ├── quote 1.0.14
0/0        4/4          0/0    0/0     0/0      ☢  │   │   │   ├── serde 1.0.133
0/0        0/0          0/0    0/0     0/0      ❓  │   │   │   │   └── serde_derive 1.0.133
0/0        12/12        0/0    0/0     3/3      ☢  │   │   │   │       ├── proc-macro2 1.0.36
0/0        0/0          0/0    0/0     0/0      ❓  │   │   │   │       ├── quote 1.0.14
0/0        47/47        3/3    0/0     2/2      ☢  │   │   │   │       └── syn 1.0.86
0/0        4/7          0/0    0/0     0/0      ☢  │   │   │   ├── serde_json 1.0.75
0/0        7/7          0/0    0/0     0/0      ☢  │   │   │   │   ├── itoa 1.0.1
7/9        587/723      0/0    0/0     2/2      ☢  │   │   │   │   ├── ryu 1.0.9
0/0        4/4          0/0    0/0     0/0      ☢  │   │   │   │   └── serde 1.0.133
8/8        202/202      0/0    0/0     0/0      ☢  │   │   │   ├── sha2 0.9.9
0/0        6/6          0/0    0/0     0/0      ☢  │   │   │   │   ├── block-buffer 0.9.0
0/0        3/3          0/0    0/0     0/0      ☢  │   │   │   │   │   ├── block-padding 0.2.1
1/1        292/292      20/20  8/8     5/5      ☢  │   │   │   │   │   └── generic-array 0.14.5
0/0        4/4          0/0    0/0     0/0      ☢  │   │   │   │   │       ├── serde 1.0.133
0/0        0/0          0/0    0/0     0/0      🔒  │   │   │   │   │       └── typenum 1.15.0
0/0        0/0          0/0    0/0     0/0      ❓  │   │   │   │   ├── cfg-if 1.0.0
0/1        0/14         0/0    0/0     0/0      ❓  │   │   │   │   ├── cpufeatures 0.2.1
0/0        0/0          0/0    0/0     0/0      🔒  │   │   │   │   ├── digest 0.9.0
1/1        292/292      20/20  8/8     5/5      ☢  │   │   │   │   │   └── generic-array 0.14.5
```


0/0 0/0 0/0 0/0 0/0
0/0 47/47 3/3 0/0 2/2
0/0 0/0 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 12/12 0/0 0/0 3/3
0/0 0/0 0/0 0/0 0/0
0/0 47/47 3/3 0/0 2/2
15/18 442/449 3/3 0/0 11/11
0/0 12/12 0/0 0/0 3/3
0/0 0/0 0/0 0/0 0/0
0/0 34/34 1/2 0/0 2/2
19/19 678/678 0/0 0/0 22/22
36/37 2067/2140 0/0 0/0 16/16
0/20 12/327 0/2 0/0 2/30
36/37 2067/2140 0/0 0/0 16/16
0/0 0/0 0/0 0/0 0/0
0/0 47/47 3/3 0/0 2/2
0/0 0/0 0/0 0/0 0/0
0/0 8/8 0/0 0/0 0/0
15/18 442/449 3/3 0/0 11/11
0/0 1/1 0/0 0/0 0/0
8/8 202/202 0/0 0/0 0/0
0/0 12/12 0/0 0/0 3/3
0/0 0/0 0/0 0/0 0/0
0/1 0/1 0/0 0/0 0/0
0/0 47/47 3/3 0/0 2/2
0/0 0/0 0/0 0/0 0/0
0/0 8/8 0/0 0/0 0/0
0/0 12/12 0/0 0/0 3/3
0/0 47/47 3/3 0/0 2/2
0/0 0/0 0/0 0/0 0/0
0/0 8/8 0/0 0/0 0/0
0/0 12/12 0/0 0/0 3/3
0/0 0/0 0/0 0/0 0/0
0/0 47/47 3/3 0/0 2/2
0/0 0/0 0/0 0/0 0/0
0/0 8/8 0/0 0/0 0/0
0/0 12/12 0/0 0/0 3/3
0/0 47/47 3/3 0/0 2/2
0/0 0/0 0/0 0/0 0/0
0/0 8/8 0/0 0/0 0/0
15/18 442/449 3/3 0/0 11/11
0/0 12/12 0/0 0/0 3/3
0/0 0/0 0/0 0/0 0/0
0/0 47/47 3/3 0/0 2/2
0/0 0/0 0/0 0/0 0/0
0/0 8/8 0/0 0/0 0/0
15/18 442/449 3/3 0/0 11/11
0/0 0/0 0/0 0/0 0/0
0/0 12/12 0/0 0/0 3/3
0/0 0/0 0/0 0/0 0/0
0/0 47/47 3/3 0/0 2/2
0/0 0/0 0/0 0/0 0/0
0/0 8/8 0/0 0/0 0/0
opaque-debug 0.3.0
syn 1.0.86
thiserror 1.0.30
thiserror-impl 1.0.30
proc-macro2 1.0.36
quote 1.0.14
syn 1.0.86
anyhow 1.0.52
proc-macro2 1.0.36
quote 1.0.14
regex 1.5.4
aho-corasick 0.7.18
memchr 2.4.1
libc 0.2.112
memchr 2.4.1
regex-syntax 0.6.25
syn 1.0.86
anchor-attribute-account 0.20.1
anchor-syn 0.20.1
anyhow 1.0.52
bs58 0.4.0
sha2 0.9.9
proc-macro2 1.0.36
quote 1.0.14
rustversion 1.0.6
syn 1.0.86
anchor-attribute-constant 0.20.1
anchor-syn 0.20.1
proc-macro2 1.0.36
syn 1.0.86
anchor-attribute-error 0.20.1
anchor-syn 0.20.1
proc-macro2 1.0.36
quote 1.0.14
syn 1.0.86
anchor-attribute-event 0.20.1
anchor-syn 0.20.1
anyhow 1.0.52
proc-macro2 1.0.36
quote 1.0.14
syn 1.0.86
anchor-attribute-interface 0.20.1
anchor-syn 0.20.1
anyhow 1.0.52
heck 0.3.3
proc-macro2 1.0.36
quote 1.0.14
syn 1.0.86
anchor-attribute-program 0.20.1
anchor-syn 0.20.1

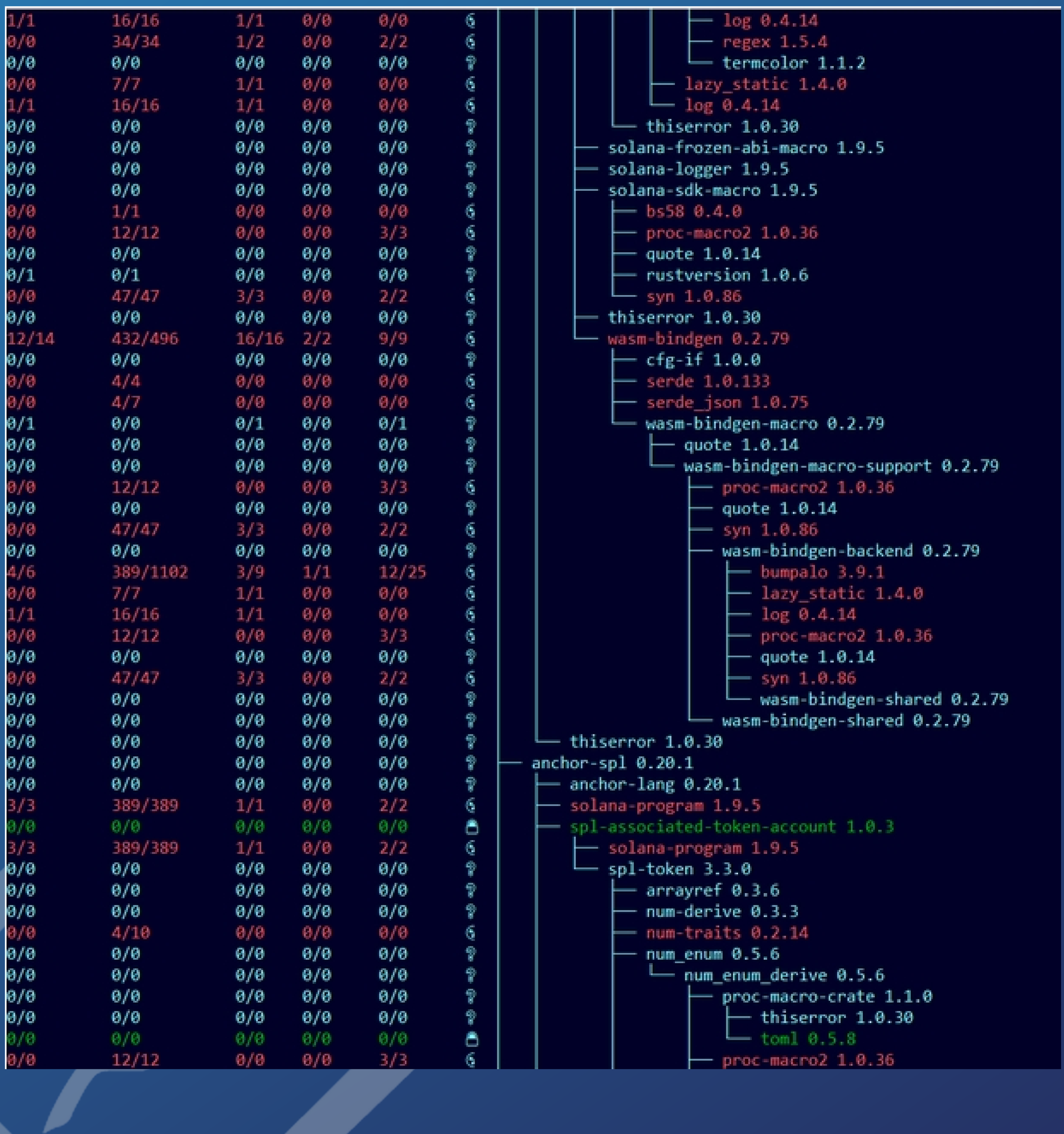
```
15/18     442/449    3/3    0/0    11/11    
0/0       12/12      0/0    0/0    3/3      
0/0       0/0        0/0    0/0    0/0      
0/0       47/47      3/3    0/0    2/2      
0/0       0/0        0/0    0/0    0/0      
0/0       8/8        0/0    0/0    0/0      
15/18     442/449    3/3    0/0    11/11    
0/0       12/12      0/0    0/0    3/3      
0/0       0/0        0/0    0/0    0/0      
0/0       47/47      3/3    0/0    2/2      
0/0       0/0        0/0    0/0    0/0      
0/0       8/8        0/0    0/0    0/0      
15/18     442/449    3/3    0/0    11/11    
0/0       12/12      0/0    0/0    3/3      
0/0       0/0        0/0    0/0    0/0      
0/0       47/47      3/3    0/0    2/2      
0/0       0/0        0/0    0/0    0/0      
0/0       0/0        0/0    0/0    0/0      
0/0       22/22      0/0    0/0    0/0      
0/0       4/4        0/0    0/0    0/0      
0/0       7/7        0/0    0/0    0/0      
0/0       0/0        0/0    0/0    0/0      
0/0       0/0        0/0    0/0    0/0      
0/0       12/12      0/0    0/0    3/3      
0/0       0/0        0/0    0/0    0/0      
0/0       47/47      3/3    0/0    2/2      
0/0       0/0        0/0    0/0    0/0      
0/0       12/12      0/0    0/0    3/3      
0/0       0/0        0/0    0/0    0/0      
0/0       47/47      3/3    0/0    2/2      
0/0       0/0        0/0    0/0    0/0      
0/0       0/0        0/0    0/0    0/0      
0/0       4/4        0/0    0/0    0/0      
0/0       12/12      0/0    0/0    3/3      
0/0       47/47      3/3    0/0    2/2      
2/2       1006/1098  16/19  0/0    35/39    
0/0       16/20      0/0    0/0    0/0      
0/0       4/4        0/0    0/0    0/0      
0/0       87/99      110/111 4/4    0/0      
0/0       0/0        0/0    0/0    0/0      
0/0       12/12      0/0    0/0    3/3      
0/0       0/0        0/0    0/0    0/0      
0/0       47/47      3/3    0/0    2/2      
3/3       389/389    1/1    0/0    2/2      
0/0       0/0        0/0    0/0    0/0      
0/0       22/22      0/0    0/0    0/0      
0/0       0/0        0/0    0/0    0/0      
10/78     71/3973    0/0    0/0    0/0      
0/0       0/0        0/0    0/0    0/0      
2/2       350/350    2/2    0/0    7/7      
```

```
    ├── anyhow 1.0.52
    ├── proc-macro2 1.0.36
    ├── quote 1.0.14
    └── syn 1.0.86
├── anchor-attribute-state 0.20.1
    ├── anchor-syn 0.20.1
    ├── anyhow 1.0.52
    ├── proc-macro2 1.0.36
    ├── quote 1.0.14
    └── syn 1.0.86
├── anchor-derive-accounts 0.20.1
    ├── anchor-syn 0.20.1
    ├── anyhow 1.0.52
    ├── proc-macro2 1.0.36
    ├── quote 1.0.14
    └── syn 1.0.86
├── arrayref 0.3.6
├── base64 0.13.0
├── bincode 1.3.3
    └── serde 1.0.133
├── borsh 0.9.1
    ├── borsh-derive 0.9.1
        ├── borsh-derive-internal 0.9.1
            ├── proc-macro2 1.0.36
            ├── quote 1.0.14
            └── syn 1.0.86
        ├── borsh-schema-derive-internal 0.9.1
            ├── proc-macro2 1.0.36
            ├── quote 1.0.14
            └── syn 1.0.86
        ├── proc-macro-crate 0.1.5
            └── toml 0.5.8
                └── serde 1.0.133
        ├── proc-macro2 1.0.36
        └── syn 1.0.86
    └── hashbrown 0.9.1
        ├── ahash 0.4.7
        └── serde 1.0.133
├── bytemuck 1.7.3
    └── bytemuck_derive 1.0.1
        ├── proc-macro2 1.0.36
        ├── quote 1.0.14
        └── syn 1.0.86
├── solana-program 1.9.5
    ├── base64 0.13.0
    ├── bincode 1.3.3
    ├── bitflags 1.3.2
    ├── blake3 1.3.0
        ├── arrayref 0.3.6
        ├── arrayvec 0.7.2
```


0/0 4/4 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 16/16 0/0 0/0 0/0
1/1 292/292 20/20 8/8 5/5
0/0 0/0 0/0 0/0 0/0
1/1 292/292 20/20 8/8 5/5
1/1 292/292 20/20 8/8 5/5
0/0 3/3 0/0 0/0 0/0
0/0 7/7 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 1/1 0/0 0/0 0/0
2/2 206/206 0/0 0/0 7/7
0/0 4/4 0/0 0/0 0/0
0/0 87/99 110/111 4/4 0/0
0/2 0/857 0/0 0/0 0/0
1/1 193/193 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 22/22 0/0 0/0 0/0
2/4 50/150 1/1 0/0 3/3
0/0 0/0 0/0 0/0 0/0
0/20 12/327 0/2 0/0 2/30
1/1 16/16 1/1 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 4/4 0/0 0/0 0/0
0/0 4/4 0/0 0/0 0/0
0/0 4/4 0/0 0/0 0/0
0/0 3/3 0/0 0/0 0/0
1/1 22/22 0/0 0/0 0/0
0/0 0/72 0/3 0/1 0/3
0/0 0/0 0/0 0/0 0/0
0/0 4/4 0/0 0/0 0/0
0/0 0/72 0/3 0/1 0/3
0/0 7/7 1/1 0/0 0/0
0/0 4/4 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
1/1 292/292 20/20 8/8 5/5
0/0 0/0 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
1/1 292/292 20/20 8/8 5/5
0/0 3/3 0/0 0/0 0/0
0/0 0/0 0/0 0/0 0/0
0/0 7/7 1/1 0/0 0/0
0/0 33/33 0/0 0/0 2/2
0/0 0/0 0/0 0/0 0/0
serde 1.0.133
cfg-if 1.0.0
constant_time_eq 0.1.5
digest 0.10.1
block-buffer 0.10.0
generic-array 0.14.5
crypto-common 0.1.1
generic-array 0.14.5
generic-array 0.14.5
subtle 2.4.1
borsh 0.9.1
borsh-derive 0.9.1
bs58 0.4.0
bv 0.11.1
serde 1.0.133
bytemuck 1.7.3
curve25519-dalek 3.2.0
byteorder 1.4.3
digest 0.9.0
rand_core 0.5.1
getrandom 0.1.16
cfg-if 1.0.0
libc 0.2.112
log 0.4.14
cfg-if 1.0.0
serde 1.0.133
serde 1.0.133
serde 1.0.133
subtle 2.4.1
zeroize 1.5.0
itertools 0.10.3
either 1.6.1
serde 1.0.133
itertools 0.10.3
lazy_static 1.4.0
libsecp256k1 0.6.0
arrayref 0.3.6
base64 0.12.3
digest 0.9.0
hmac-drbg 0.3.0
digest 0.9.0
generic-array 0.14.5
hmac 0.8.1
crypto-mac 0.8.0
generic-array 0.14.5
subtle 2.4.1
digest 0.9.0
lazy_static 1.4.0
libsecp256k1-core 0.2.2
crunchy 0.2.2

```
0/0     0/0     0/0   0/0   0/0
0/0     3/3     0/0   0/0   0/0
0/0     15/15   0/0   0/0   0/0
2/4     50/150  1/1   0/0   3/3
0/20    12/327  0/2   0/0   2/30
1/1     16/16   1/1   0/0   0/0
0/0     0/0     0/0   0/0   0/0
2/2     636/712 0/0   0/0   17/25
0/0     22/22   0/0   0/0   0/0
0/0     22/22   0/0   0/0   0/0
0/0     4/4     0/0   0/0   0/0
8/8     202/202 0/0   0/0   0/0
0/0     0/0     0/0   0/0   0/0
1/1     16/16   1/1   0/0   0/0
0/0     0/0     0/0   0/0   0/0
0/0     12/12   0/0   0/0   3/3
0/0     0/0     0/0   0/0   0/0
0/0     47/47   3/3   0/0   2/2
0/0     4/10    0/0   0/0   0/0
0/0     15/15   0/0   0/0   0/0
0/1     0/1     0/0   0/0   0/0
0/0     4/4     0/0   0/0   0/0
0/0     16/16   0/0   0/0   0/0
0/0     4/4     0/0   0/0   0/0
0/0     0/0     0/0   0/0   0/0
8/8     202/202 0/0   0/0   0/0
0/0     14/14   0/0   0/0   0/0
0/0     6/6     0/0   0/0   0/0
0/0     0/0     0/0   0/0   0/0
0/0     0/0     0/0   0/0   0/0
0/0     0/0     0/0   0/0   0/0
0/0     0/0     0/0   0/0   0/0
0/0     1/1     0/0   0/0   0/0
2/2     206/206 0/0   0/0   7/7
1/1     292/292 20/20 8/8   5/5
1/1     16/16   1/1   0/0   0/0
0/0     136/271 4/6   0/0   7/7
0/20    12/327  0/2   0/0   2/30
0/0     4/4     0/0   0/0   0/0
0/0     0/0     0/0   0/0   0/0
8/8     202/202 0/0   0/0   0/0
0/0     0/0     0/0   0/0   0/0
0/0     12/12   0/0   0/0   3/3
0/0     0/0     0/0   0/0   0/0
0/0     47/47   3/3   0/0   2/2
0/0     0/0     0/0   0/0   0/0
0/0     0/0     0/0   0/0   0/0
2/2     45/45   0/0   0/0   0/0
0/20    12/327  0/2   0/0   2/30
0/0     0/0     0/0   0/0   0/0
```

```
        ├── digest 0.9.0
        └── subtle 2.4.1
    ├── rand 0.7.3
    │   ├── getrandom 0.1.16
    │   ├── libc 0.2.112
    │   ├── log 0.4.14
    │   ├── rand_chacha 0.2.2
    │   │   ├── ppv-lite86 0.2.16
    │   │   └── rand_core 0.5.1
    │   └── rand_core 0.5.1
    ├── serde 1.0.133
    ├── sha2 0.9.9
    └── typenum 1.15.0
├── log 0.4.14
├── num-derive 0.3.3
│   ├── proc-macro2 1.0.36
│   ├── quote 1.0.14
│   └── syn 1.0.86
├── num-traits 0.2.14
├── rand 0.7.3
├── rustversion 1.0.6
├── serde 1.0.133
├── serde_bytes 0.11.5
│   └── serde 1.0.133
├── serde_derive 1.0.133
├── sha2 0.9.9
├── sha3 0.9.1
│   ├── block-buffer 0.9.0
│   ├── digest 0.9.0
│   ├── keccak 0.1.0
│   └── opaque-debug 0.3.0
└── solana-frozen-abi 1.9.5
    ├── bs58 0.4.0
    ├── bv 0.11.1
    ├── generic-array 0.14.5
    ├── log 0.4.14
    ├── memmap2 0.5.2
    │   └── libc 0.2.112
    ├── serde 1.0.133
    ├── serde_derive 1.0.133
    ├── sha2 0.9.9
    ├── solana-frozen-abi-macro 1.9.5
    │   ├── proc-macro2 1.0.36
    │   ├── quote 1.0.14
    │   └── syn 1.0.86
    └── solana-logger 1.9.5
        └── env_logger 0.9.0
            ├── atty 0.2.14
            │   └── libc 0.2.112
            └── humantime 2.1.0
```



```
1/1     16/16   1/1   0/0   0/0   ✓
0/0     34/34   1/2   0/0   2/2   ✓
0/0     0/0     0/0   0/0   0/0   ?
0/0     7/7     1/1   0/0   0/0   ✓
1/1     16/16   1/1   0/0   0/0   ✓
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     1/1     0/0   0/0   0/0   ✓
0/0     12/12   0/0   0/0   3/3   ✓
0/0     0/0     0/0   0/0   0/0   ?
0/1     0/1     0/0   0/0   0/0   ?
0/0     47/47   3/3   0/0   2/2   ✓
0/0     0/0     0/0   0/0   0/0   ?
12/14   432/496 16/16 2/2   9/9   ✓
0/0     0/0     0/0   0/0   0/0   ?
0/0     4/4     0/0   0/0   0/0   ✓
0/0     4/7     0/0   0/0   0/0   ✓
0/1     0/0     0/1   0/0   0/1   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     12/12   0/0   0/0   3/3   ✓
0/0     0/0     0/0   0/0   0/0   ?
0/0     47/47   3/3   0/0   2/2   ✓
0/0     0/0     0/0   0/0   0/0   ?
4/6     389/1102 3/9  1/1   12/25 ✓
0/0     7/7     1/1   0/0   0/0   ✓
1/1     16/16   1/1   0/0   0/0   ✓
0/0     12/12   0/0   0/0   3/3   ✓
0/0     0/0     0/0   0/0   0/0   ?
0/0     47/47   3/3   0/0   2/2   ✓
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
3/3     389/389 1/1   0/0   2/2   ✓
0/0     0/0     0/0   0/0   0/0   🔒
3/3     389/389 1/1   0/0   2/2   ✓
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     4/10    0/0   0/0   0/0   ✓
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   ?
0/0     0/0     0/0   0/0   0/0   🔒
0/0     12/12   0/0   0/0   3/3   ✓
```

```
        ├── log 0.4.14
        ├── regex 1.5.4
        └── termcolor 1.1.2
    ├── lazy_static 1.4.0
    └── log 0.4.14
└── thiserror 1.0.30
solana-frozen-abi-macro 1.9.5
solana-logger 1.9.5
solana-sdk-macro 1.9.5
├── bs58 0.4.0
├── proc-macro2 1.0.36
├── quote 1.0.14
├── rustversion 1.0.6
└── syn 1.0.86
thiserror 1.0.30
wasm-bindgen 0.2.79
├── cfg-if 1.0.0
├── serde 1.0.133
├── serde_json 1.0.75
└── wasm-bindgen-macro 0.2.79
    ├── quote 1.0.14
    └── wasm-bindgen-macro-support 0.2.79
        ├── proc-macro2 1.0.36
        ├── quote 1.0.14
        ├── syn 1.0.86
        ├── wasm-bindgen-backend 0.2.79
        │   ├── bumpalo 3.9.1
        │   ├── lazy_static 1.4.0
        │   ├── log 0.4.14
        │   ├── proc-macro2 1.0.36
        │   ├── quote 1.0.14
        │   ├── syn 1.0.86
        │   └── wasm-bindgen-shared 0.2.79
        └── wasm-bindgen-shared 0.2.79
└── thiserror 1.0.30
anchor-spl 0.20.1
├── anchor-lang 0.20.1
├── solana-program 1.9.5
├── spl-associated-token-account 1.0.3
│   ├── solana-program 1.9.5
│   └── spl-token 3.3.0
│       ├── arrayref 0.3.6
│       ├── num-derive 0.3.3
│       ├── num-traits 0.2.14
│       ├── num_enum 0.5.6
│       │   └── num_enum_derive 0.5.6
│       │       ├── proc-macro-crate 1.1.0
│       │       │   ├── thiserror 1.0.30
│       │       │   └── toml 0.5.8
│       │       ├── proc-macro2 1.0.36
```

```
0/0         0/0          0/0     0/0     0/0
0/0         0/0          0/0     0/0     0/0
0/0         12/12        0/0     0/0     3/3
0/0         0/0          0/0     0/0     0/0
0/0         47/47        3/3     0/0     2/2
3/3         389/389      1/1     0/0     2/2
0/0         0/0          0/0     0/0     0/0
0/0         0/0          0/0     0/0     0/0
3/3         389/389      1/1     0/0     2/2
0/0         0/0          0/0     0/0     0/0
0/0         17/17        0/0     0/0     0/0
0/0         0/0          0/0     0/0     0/0
0/0         0/0          0/0     0/0     0/0
0/0         12/12        0/0     0/0     3/3
0/0         0/0          0/0     0/0     0/0
0/0         47/47        3/3     0/0     2/2
0/0         0/0          0/0     0/0     0/0
0/0         12/12        0/0     0/0     3/3
0/0         0/0          0/0     0/0     0/0
0/0         47/47        3/3     0/0     2/2
0/0         12/12        0/0     0/0     3/3
0/0         47/47        3/3     0/0     2/2
0/0         0/0          0/0     0/0     0/0
0/0         0/0          0/0     0/0     0/0
0/0         12/12        0/0     0/0     3/3
0/0         0/0          0/0     0/0     0/0
0/0         47/47        3/3     0/0     2/2
0/0         0/0          0/0     0/0     0/0
0/0         12/12        0/0     0/0     3/3
0/0         47/47        3/3     0/0     2/2
0/0         0/0          0/0     0/0     0/0
0/0         4/10         0/0     0/0     0/0
3/3         389/389      1/1     0/0     2/2
0/0         0/0          0/0     0/0     0/0
0/0         0/0          0/0     0/0     0/0
1/1         193/193      0/0     0/0     0/0
0/0         0/0          0/0     0/0     0/0
0/0         15/15        0/0     0/0     0/0
0/0         0/0          0/0     0/0     0/0
0/0         0/0          0/0     0/0     0/0

133/238     8666/15248   182/201 15/16   166/223

error: Found 7 warnings
```

```
                    thiserror 1.0.30
                    toml 0.5.8
                proc-macro2 1.0.36
                quote 1.0.14
                syn 1.0.86
            solana-program 1.9.5
            thiserror 1.0.30
        spl-token 3.3.0
    solana-program 1.9.5
    spl-math 0.1.0
        borsh 0.7.2
            borsh-derive 0.7.2
                borsh-derive-internal 0.7.2
                    proc-macro2 1.0.36
                    quote 1.0.14
                    syn 1.0.86
                borsh-schema-derive-internal 0.7.2
                    proc-macro2 1.0.36
                    quote 1.0.14
                    syn 1.0.86
                proc-macro2 1.0.36
                syn 1.0.86
        borsh-derive 0.8.2
            borsh-derive-internal 0.8.2
                proc-macro2 1.0.36
                quote 1.0.14
                syn 1.0.86
            borsh-schema-derive-internal 0.8.2
                proc-macro2 1.0.36
                quote 1.0.14
                syn 1.0.86
            proc-macro-crate 0.1.5
            proc-macro2 1.0.36
            syn 1.0.86
        num-derive 0.3.3
        num-traits 0.2.14
        solana-program 1.9.5
        thiserror 1.0.30
        uint 0.8.5
            byteorder 1.4.3
            crunchy 0.2.2
            rand 0.7.3
            rustc-hex 2.1.0
            static_assertions 1.1.0
    spl-token 3.3.0
```

Cargo tarpaulin

```
Mar 17 00:12:37.205  INFO cargo_tarpaulin::process_handling::linux: Launching test
Mar 17 00:12:37.205  INFO cargo_tarpaulin::process_handling: running /root/token-faucet-master/target/debug/deps/token_faucet-f3f920d96777c2e3

running 1 test
test test_id ... ok

test result: ok. 1 passed; 0 failed; 0 ignored; 0 measured; 0 filtered out; finished in 0.01s

Mar 17 00:12:38.701  INFO cargo_tarpaulin::report: Coverage Results:
|| Tested/Total Lines:
|| ../../node_modules/@solana/web3.js/examples/bpf-rust-noop/src/lib.rs: 0/1
|| src/lib.rs: 1/114
||
0.87% coverage, 1/115 lines covered
```

Closing Summary

Overall, programs are very well written and adhere to guidelines.
The best practices were already followed, and the logic of the program is verified to not contain any critical issues.

Disclaimer

Quillhash audit is not a security warranty, investment advice, or an endorsement of the Gameyoo Program. This audit does not provide a security or correctness guarantee of the audited programs. The statements made in this document should not be interpreted as investment or legal advice, nor should its authors be held accountable for decisions made based on them. Securing programs is a multistep process. One audit cannot be considered enough. We recommend that the Gameyoo Team put in place a bug bounty program to encourage further analysis of the programs by other third parties.

Audit Report
March, 2022

For

GAMEYOO

QuillAudits

Canada, India, Singapore, United Kingdom

audits.quillhash.com

audits@quillhash.com