

Signing the Artifact

```
dipto@dipto-VirtualBox:~$ cd HW1
dipto@dipto-VirtualBox:~/HW1$ cosign sign-blob artifact.md --bundle artifact.bundle
```

The sigstore service, hosted by sigstore a Series of LF Projects, LLC, is provided pursuant to the Hosted Project Tools Terms of Use, available at <https://lfprojects.org/policies/hosted-project-tools-terms-of-use/>.

Note that if your submission includes personal data associated with this signed artifact, it will be part of an immutable record.

This may include the email address associated with the account with which you authenticate your contractual Agreement.

This information will be used for signing this artifact and will be stored in public transparency logs and cannot be removed later, and is subject to the Immutable Record notice at <https://lfprojects.org/policies/hosted-project-tools-immutable-records/>.

By typing 'y', you attest that (1) you are not submitting the personal data of any other person; and (2) you understand and agree to the statement and the Agreement terms at the URLs listed above.

Are you sure you would like to continue? [y/N] y

Generating ephemeral keys...

Your browser will now be opened to:

https://oauth2.sigstore.dev/auth/auth?access_type=online&client_id=sigstore&code_challenge=JgbSn7NveKj1uURkrn1cZG_w3eKcJVI37VYcUoZppAo&code_challenge_method=S256

```
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Retrieving signed certificate...

Successfully verified SCT...

Using payload from: artifact.md

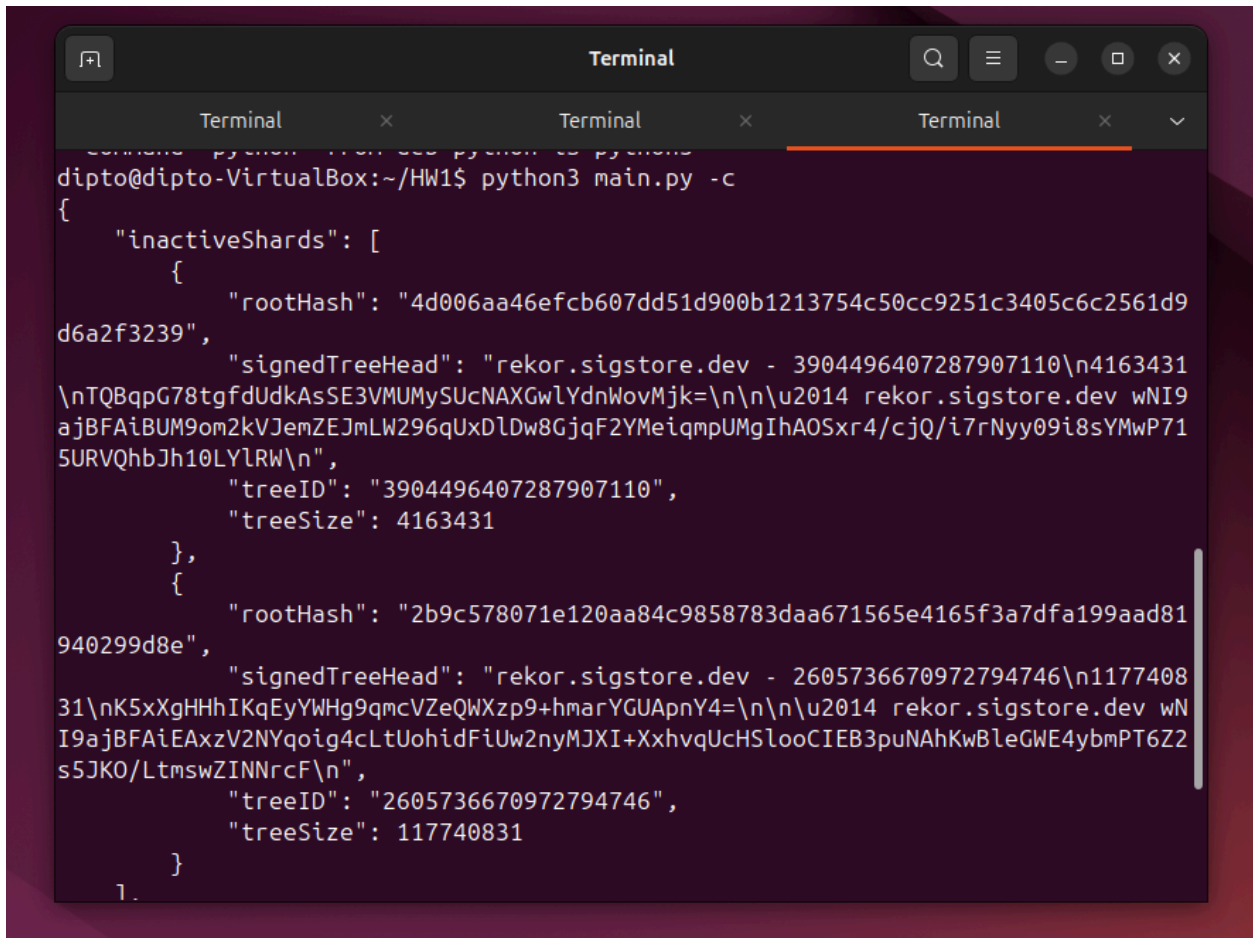
tlog entry created with index: 547323620

Wrote bundle to file artifact.bundle

MEYCIQCNrRT4rxNS8+1lqcrW4mCJZYSZJqQ22vjoEpf34FyTbAIhAK3v6g+Pd01qv5xDiSxqN4cmzjR5BmBl50/M5d1IkD0G

```
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```

Fetching the last checkpoint

A terminal window titled "Terminal" with three tabs. The active tab shows the command `python3 main.py -c` being executed. The output is a JSON object with an "inactiveShards" array containing two shard objects. Each object has fields for "rootHash", "signedTreeHead", "treeID", and "treeSize". The first shard has a tree size of 4163431 and the second has a tree size of 117740831. The terminal background is dark purple with a lighter purple gradient on the right side.

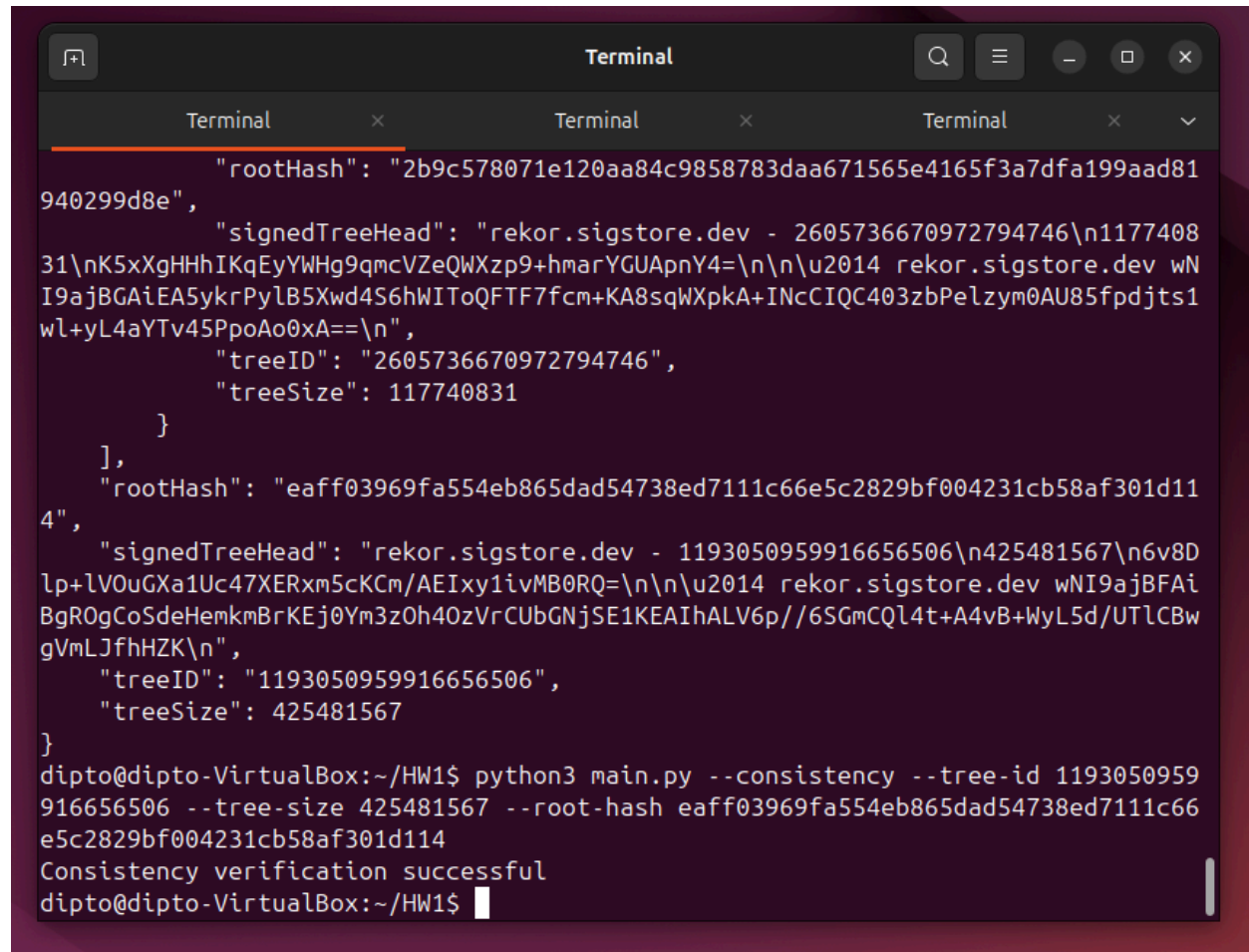
```
dipto@dipto-VirtualBox:~/HW1$ python3 main.py -c
{
  "inactiveShards": [
    {
      "rootHash": "4d006aa46efcb607dd51d900b1213754c50cc9251c3405c6c2561d9
d6a2f3239",
      "signedTreeHead": "rekor.sigstore.dev - 3904496407287907110\n4163431
\nTQBqpG78tgfdUdkAsSE3VMUMySUCNAXGwLYdnWovMjk=\n\n\u2014 rekor.sigstore.dev wNI9
ajBFAiBUM9om2kVJemZEJmLW296qUxDlDw8GjqF2YMeiqmpUMgIhAOSxr4/cjQ/i7rNyy09i8sYMwP71
5URVQhbJh10LYlRW\n",
      "treeID": "3904496407287907110",
      "treeSize": 4163431
    },
    {
      "rootHash": "2b9c578071e120aa84c9858783daa671565e4165f3a7dfa199aad81
940299d8e",
      "signedTreeHead": "rekor.sigstore.dev - 2605736670972794746\n1177408
31\nK5xXgHHhIKqEyYWHg9qmcVZeQWZp9+hmarYGUApnY4=\n\n\u2014 rekor.sigstore.dev wN
I9ajBFAiEAXzV2NYqoig4cLtUohidFiUw2nyMJXI+XxhvqUcHSlooCIEB3puNAhKwBleGWE4ybmPT6Z2
s5JKO/LtmswZINNrcF\n",
      "treeID": "2605736670972794746",
      "treeSize": 117740831
    }
  ]
}
```

Verifying inclusion

```
Terminal
Terminal
Terminal

    "rootHash": "2b9c578071e120aa84c9858783daa671565e4165f3a7dfa199aad81
940299d8e",
    "signedTreeHead": "rekor.sigstore.dev - 2605736670972794746\n1177408
31\nK5xXgHHhIKqEyYWHg9qmcVZeQWXzp9+hmarYGUApnY4=\n\n\u2014 rekor.sigstore.dev wN
I9ajBFAiEAxzV2NYqoig4cLtUohidFiUw2nyMJXI+XxhvqUcHSlooCIEB3puNAhKwBLEGWE4ybmPT6Z2
s5JKO/LtmswZINNrcF\n",
    "treeID": "2605736670972794746",
    "treeSize": 117740831
  }
],
"rootHash": "3efff575a2105421afad43763e5a5277e9e8e59765a08bd1ea6007000f62284
a",
"signedTreeHead": "rekor.sigstore.dev - 1193050959916656506\n425431224\nPv/1
daIQVCgvrUN2PlpSd+no5ZdloIvR6mAHAA9iKEo=\n\n\u2014 rekor.sigstore.dev wNI9ajBFAi
AgjxBLYsH6Bzmf5XJphJtyLeLW4jgf990FjnCquGtG+QIhAJf3lbLo/BPo9SevdZ0qWeubl6Hh9j10oR
0nADMiStst\n",
"treeID": "1193050959916656506",
"treeSize": 425431224
}
dipto@dipto-VirtualBox:~/HW1$ python3 main.py --inclusion 547323620 --artifact a
rtifact.md
Signature is valid
Offline root hash calculation for inclusion verified
dipto@dipto-VirtualBox:~/HW1$
```

Verifying consistency with latest checkpoint



```
Terminal
Terminal
Terminal

    "rootHash": "2b9c578071e120aa84c9858783daa671565e4165f3a7dfa199aad81
940299d8e",
    "signedTreeHead": "rekor.sigstore.dev - 2605736670972794746\n1177408
31\nK5xXgHHhIKqEyYWHg9qmcVZeQWxzp9+hmarYGUApnY4=\n\n\u2014 rekor.sigstore.dev wN
I9ajBGAiEA5ykrPyLB5Xwd4S6hWIToQFTF7fcm+KA8sqWXpkA+INcCIQC403zbPelzym0AU85fpdjts1
wl+yL4aYTv45PpoAo0xA==\n",
    "treeID": "2605736670972794746",
    "treeSize": 117740831
  }
],
  "rootHash": "eaff03969fa554eb865dad54738ed7111c66e5c2829bf004231cb58af301d11
4",
  "signedTreeHead": "rekor.sigstore.dev - 1193050959916656506\n425481567\n6v8D
lp+lVOuGXa1Uc47XERxm5cKCm/AEixy1ivMB0RQ=\n\n\u2014 rekor.sigstore.dev wNI9ajBFAi
BgROgCoSdeHemkmBrKEj0Ym3z0h40zVrCUBGNjSE1KEAIhALV6p//6SGmCQl4t+A4vB+WyL5d/UTlCBw
gVmLJfhHZK\n",
  "treeID": "1193050959916656506",
  "treeSize": 425481567
}
dipto@dipto-VirtualBox:~/HW1$ python3 main.py --consistency --tree-id 1193050959
916656506 --tree-size 425481567 --root-hash eaff03969fa554eb865dad54738ed7111c66
e5c2829bf004231cb58af301d114
Consistency verification successful
dipto@dipto-VirtualBox:~/HW1$
```