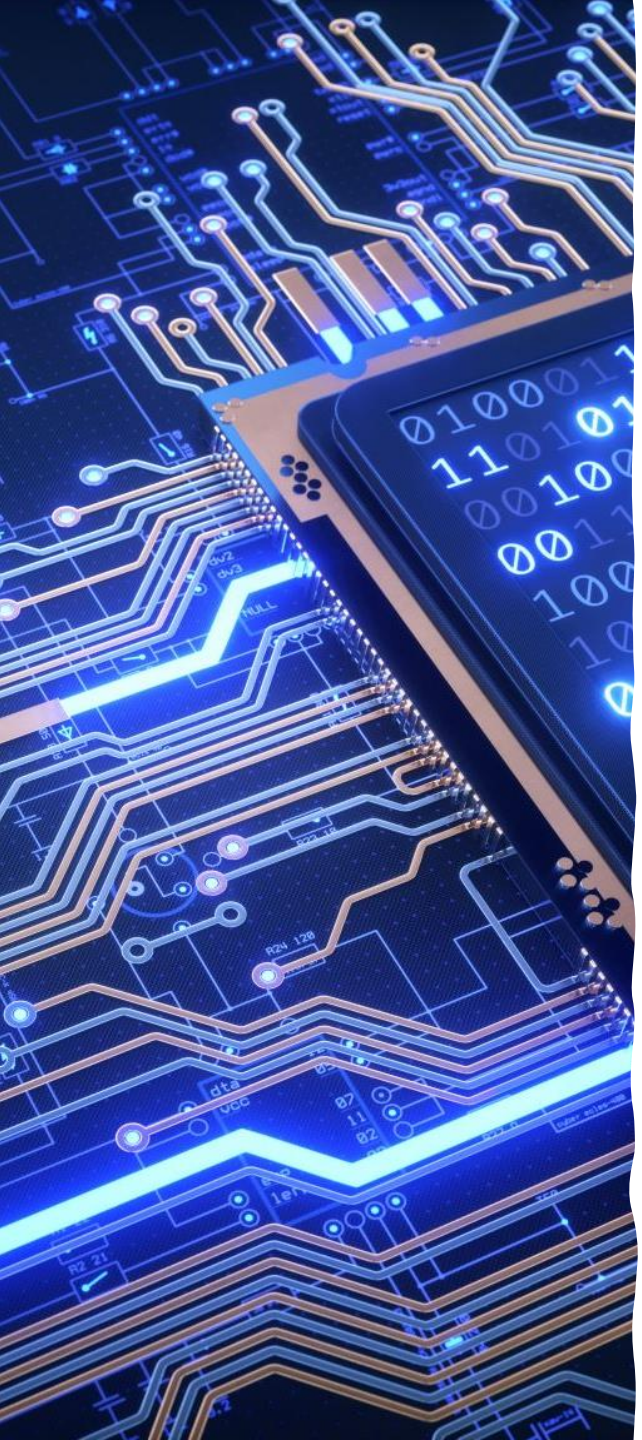

IoT-Cloud and Blockchain

Sha256

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Outline

Motivation

Simple Python SHA256

Code

Running

Motivation

Quickly distinguish large files

Fingerprints

Determine whether large files have changed

Message digest hash functions

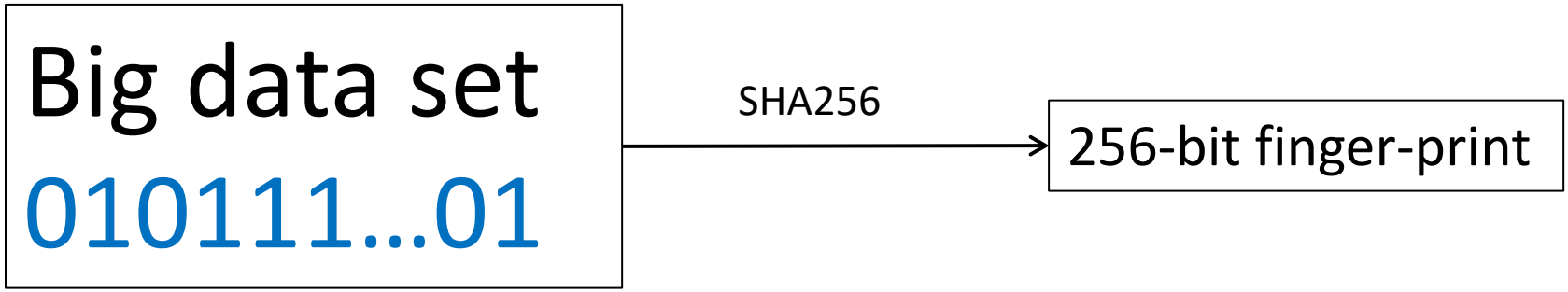
Take very large files and produce 256-bit fingerprints

Pigeonhole principle

practically foiled by size $2^{256}+1$ is *very* large

Sha256 has no known collisions

SHA256 standard



SHA-256: Secure Hash (Digest) Algorithm

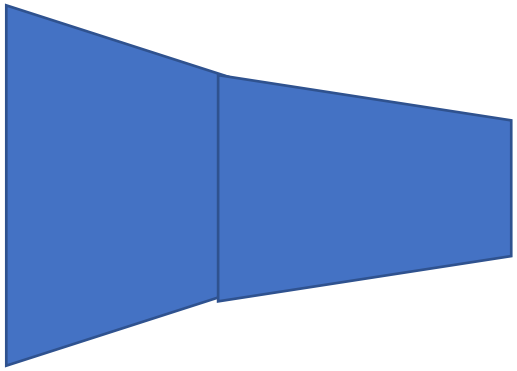
- Designed by NSA and standardized by NIST (1994-2001)

SHA-256 Hashing

- One-way
- Digital finger-prints
- Digest takes up to 2^{64}-1 bit input and outputs 256-bit output

Our simple Blocks

DATA



Ce50f7d76ff4d7…

Fingerprint output

Preparation

Python3

pip3 install pycryptodome

https://github.com/wonder-phil/BlockchainRPiExtras.git

Sha256

```
import datetime
import hashlib

class ExampleHash:

    def __init__(self):
        self.hashFunction = hashlib.new('sha256')

    def compHash(self, data):
        myBytes = data.encode()
        self.hashFunction.update(myBytes)
```