

WHAT IS CLAIMED IS:

1. A method for representing scalar digital assets using hash chains, the method comprising:
 - 5 receiving, by a receiver of a processing server, a data request for one or more units of a scalar digital asset from a computing device;
 - identifying, by a processor of the processing server, the scalar digital asset requested by the computing device;
 - identifying, by a processor of the processing server, the one or more units of
10 the scalar digital asset;
 - verifying, by a processor of the processing server, the computing device has access to the scalar digital asset;
 - generating, by the processor of the processing server, a hash chain of the one or more units of the scalar digital asset; and
 - 15 transmitting, by a transmitter of the processing server, a data response message containing the hash chain of the one or more units of the scalar digital asset to the computing device.
2. The method of claim 1, wherein generating, by the processor of the
20 processing server, a hash chain of the one or more units of the scalar digital asset further comprises:
 - applying, by the processor of the processing server, a hash digest function to each of the one or more units of the scalar digital asset using a random initial value.
- 25 3. The method of claim 2, wherein each unit of the one or more units of the scalar digital asset is represented by a single hash in the hash chain.
4. The method of claim 2, wherein a range of the one or more units of the scalar digital asset is represented by a start hash and an end hash.
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5. The method of claim 1, wherein the scalar digital asset is a digital currency.
6. The method of claim 1, wherein one unit of the one or more units of the scalar digital asset is the smallest unit of the scalar digital asset.

7. The method of claim 1, wherein one unit of the one or more units of the scalar digital asset is a designated unit size of the scalar digital asset.

8. The method of claim 1, wherein the scalar digital asset is stored on a
5 blockchain network.

9. The method of claim 1, wherein the hash chain is transferrable in an offline environment by the first computing device to a secondary computing device.

10 10. The method of claim 1, wherein a designated range of the hash chain is transferrable in an offline environment by the first computing device to a secondary computing device.

11. A system for representing scalar digital assets using hash chains, the
15 system comprising:

one or more processors, one or more computer-readable memories, one or more computer-readable tangible storage devices, and instructions stored on at least one of the one or more storage devices for execution by at least one of the one or more processors via at least one of the one or more memories, the instructions

20 comprising:

instructions to receive, by a receiver of a processing server, a data request for one or more units of a scalar digital asset from a computing device;

instructions to identify, by a processor of the processing server, the scalar digital asset requested by the computing device;

25 instructions to identify, by a processor of the processing server, the one or more units of the scalar digital asset;

instructions to verify, by a processor of the processing server, the computing device has access to the scalar digital asset;

30 instructions to generate, by the processor of the processing server, a hash chain of the one or more units of the scalar digital asset; and

instructions to transmit, by a transmitter of the processing server, a data response message containing the hash chain of the one or more units of the scalar digital asset to the computing device.

12. The system of claim 11, wherein the instructions to generate, by the processor of the processing server, a hash chain of the one or more units of the scalar digital asset further comprise:

instructions to apply, by the processor of the processing server, a hash digest
5 function to each of the one or more units of the scalar digital asset using a random initial value.

13. The system of claim 12, wherein each unit of the one or more units of the scalar digital asset is represented by a single hash in the hash chain.

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14. The system of claim 12, wherein a range of the one or more units of the scalar digital asset is represented by a start hash and an end hash

15. The system of claim 11, wherein the scalar digital asset is a digital
15 currency.

16. The system of claim 11, wherein one unit of the one or more units of the scalar digital asset is the smallest unit of the scalar digital asset.

17. The system of claim 11, wherein one unit of the one or more units of the scalar digital asset is a designated unit size of the scalar digital asset.

18. The system of claim 11, wherein the scalar digital asset is stored on a blockchain network.

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19. The system of claim 11, wherein the hash chain is transferrable in an offline environment by the first computing device to a secondary computing device.

20. The system of claim 11, wherein a designated range of the hash chain is
30 transferrable in an offline environment by the first computing device to a secondary computing device.