What Is Claimed Is:

1. A computer-implemented method for generating a privacy-preserving token, the method comprising:

calculating a privacy-preserving representation of a set of attributes associated with a non-fungible token representing an asset, wherein calculating the privacy-preserving representation comprises calculating a Merkle tree root hash based on a value associated with each attribute of the set of attributes, wherein the value associated with each attribute of the set of attributes has a corresponding hash stored on a leaf node of the Merkle tree;

generating the non-fungible token representing the asset, wherein the non-fungible token comprises an identifier and metadata associated with the identifier, wherein the metadata comprises the privacy-preserving representation of the set of attributes; and

recording the non-fungible token on a blockchain system.

2. A computer-implemented method for verifying an attribute value of an asset represented by a privacy-preserving token, wherein the token is a non-fungible token recorded on a blockchain system and comprises an identifier and metadata associated with the identifier, a privacy-preserving representation of a set of attributes associated with the asset is calculated by calculating a Merkle tree root hash based on a value associated with each attribute of the set of attributes and is recorded on a blockchain system as the metadata of the token, and the value associated with each attribute of the set of attributes has a corresponding hash stored on a leaf node of the Merkle tree, the method comprising:

identifying, in the Merkle tree, a particular leaf node that stores the hash corresponding to the value associated with a particular attribute of the set of attributes;

identifying, in the Merkle tree, an authentication path of the particular leaf node;

obtaining one or more hashes stored in one or more nodes on the authentication path; and

providing the one or more hashes stored in the one or more nodes on the authentication path to a verifier to facilitate a verification of the value associated with the particular attribute.

3. A computer-implemented method for verifying an attribute value of an asset represented by a privacy-preserving token, wherein the token is a non-fungible token recorded on a blockchain system and comprises an identifier and metadata associated with the identifier, a privacy-preserving representation of a set of attributes associated with the asset is calculated by calculating a Merkle tree root hash based on a value associated with each attribute of the set of attributes and is recorded on a blockchain system as the metadata of the token, and the value associated with each attribute of the set of attributes has a corresponding hash stored on a leaf node of the Merkle tree, the method comprising:

receiving one or more hashes stored in one or more nodes on an authentication path of a particular leaf node of the Merkle tree, the particular leaf node storing a hash corresponding to the value associated with a particular attribute of the set of attributes;

calculating a root hash based on the received hashes;

obtaining the token recorded on the blockchain system; and

verifying, based on the calculated root hash, whether the metadata of the token recorded on the blockchain system is calculated based on the value associated with

the particular attribute without knowing the value associated with at least one other attribute of the set of attributes.

4. The method of any preceding claim, wherein the privacy-preserving representation is calculated by calculating the Merkle tree root hash based on a cryptographic nonce.

5. The method of claim 4, wherein a hash corresponding to the cryptographic nonce is stored on a node of the Merkle tree.

6. The method of any of claims 2 and 3, wherein the authentication path of the particular leaf node comprises siblings of all nodes on a path from the particular leaf node to a Merkle tree root.

7. The method of any of claims 2 and 3, wherein a smart contract is deployed in the blockchain system to verify the value associated with the particular attribute.

8. The method of claim 3, wherein the calculating the root hash based on the hashes received comprises:

calculating the root hash based on a hash stored in the particular leaf node and the one or more hashes stored in the one or more nodes on the authentication path.

9. The method of claim 8, wherein the verifying whether the metadata of the token recorded on the blockchain system is calculated based on the value associated with the particular attribute comprises:

comparing the calculated root hash with the metadata of the token recorded on the blockchain system.

10. The method of claim 9, wherein the verifying whether the metadata of the token recorded on the blockchain system is calculated based on the value associated with the particular attribute further comprises:

accepting the metadata of the token recorded on the blockchain system as being calculated based on the value associated with the particular attribute in response to a determination that the calculated root hash matches the metadata of the token recorded on the blockchain system.

11. A device for verifying an attribute value of an asset, comprising:

one or more processors; and

one or more computer-readable memories coupled to the one or more processors and having instructions stored thereon that are executable by the one or more processors to perform the method of any of claims 2 to 10.

12. An apparatus for verifying an attribute value of an asset, the apparatus comprising a plurality of modules for performing the method of any of claims 2 to 10.

13. A non-transitory computer-readable medium having stored therein instructions that, when executed by a processor of a device, cause the device to perform the method of any of claims 2 to 10.