WHAT IS CLAIMED IS:

1. A computer-implemented method for executing a multi-party transaction in a blockchain network, the method comprising:

receiving first transaction information for the multi-party transaction from a first computer node in the blockchain network, wherein the first transaction information comprises a transaction payload, a first public key, and a first signed transaction payload comprising the transaction payload signed with a first private key corresponding to the first public key;

verifying the first signed transaction payload using the first public key;

in response to the verifying the first signed transaction payload:

constructing an unconfirmed transaction data package;

storing the unconfirmed transaction data package as a value in a key-value pair, wherein a key in the key-value pair is a hash of the transaction payload; and

setting a confirmation status of the unconfirmed transaction data package;

receiving second transaction information from a second computer node in the blockchain network, wherein the second transaction information comprises the hash of the transaction payload, a second public key, and a second signed transaction payload comprising the transaction payload signed with a second private key corresponding to the second public key;

verifying the second signed transaction payload using the second public key;

in response to verifying the second signed transaction payload, locating the unconfirmed transaction data package using the hash of the transaction payload comprised in the second transaction information;

updating the confirmation status of the unconfirmed transaction data package; and

executing the transaction payload in response to the confirmation status indicating that all parties to the multi-party transaction have confirmed the transaction.

2. The method of claim 1, wherein the unconfirmed data package comprises addresses of all nodes required for the execution of the multi-party transaction.

3. The method of claim 1, wherein the unconfirmed data package is stored in an unconfirmed transaction pool maintained by the blockchain network.

4. The method of claim 1, wherein the transaction payload includes a universally unique identifier in the blockchain network.

5. The method of claim 1, further comprising recording execution of the transaction payload in a blockchain maintained by the blockchain network.

6. The method of claim 1, wherein the first and the second public keys are stored in a block of a blockchain maintained by the blockchain network.

7. The method of claim 1, wherein the transaction payload comprises an exchange of at least one asset between the first node and the second node.

8. One or more computer-readable storage media encoded with instructions that, when executed by one or more computers, cause the one or more computers to perform operations in accordance with the method of one or more of claims 1-7.

9. A system, comprising:

one or more computers; and

one or more computer-readable memories coupled to the one or more computers and configured with instructions executable by the one or more computers to perform operations in accordance with the method of one or more of claims 1-7.