CLAIMS

What is claimed is:

1. A method for chaining service data, comprising the following:

obtaining service data to be chained that is generated for each service processing node for a target service, wherein the service data to be chained comprises feature values corresponding to a plurality of service data fields;

invoking a smart contract deployed in a blockchain to generate, based on the feature values corresponding to the plurality of service data fields and at least one predetermined digest information field, service data digest information corresponding to the service processing node, wherein the at least one predetermined digest information field comprises at least one specified data field in a unified digest data structure built for a plurality of service processing nodes; and

storing the service data digest information and the service data to be chained in the blockchain,

wherein after storing the service data digest information and the service data to be chained in the blockchain, the method further comprises the following:

receiving a data query request from a service data query terminal, and the data query request comprises a service processing order identifier of the target service;

obtaining service data digest information and chained service data of a plurality of service processing nodes corresponding to the service processing order identifier from the blockchain; and

sending the service data digest information and the chained service data to the service data query terminal, so that the service data query terminal displays the service data digest information based on the unified digest data structure.

2. The method according to claim 1, wherein the generating, based on the feature values corresponding to the plurality of service data fields and at least one predetermined digest information field, service data digest information corresponding to the service processing node comprises the following:

determining, from the feature values corresponding to the plurality of service data fields, a feature value corresponding to each target data field that matches the

at least one predetermined digest information field; and

generating, based on the feature value of the target data field, the service data digest information corresponding to the service processing node.

3. The method according to claim 2, wherein the generating, based on the feature value of the target data field, the service data digest information corresponding to the service processing node comprises the following:

assigning a value to each specified data field in the unified digest data structure based on the feature value of the target data field, to obtain a post-assignment unified digest data structure; and

determining the post-assignment unified digest data structure as the service data digest information corresponding to the service processing node.

4. The method according to claim 2, wherein before the obtaining service data to be chained that is generated for each service processing node for a target service, the method further comprises the following:

determining a combination of a service executor, a service processing action type, and a service operation object as a specified data field representing a service operation content description of the service processing node;

building a unified digest data structure based on a service processing identifier and the service operation content description; and

generating a smart contract that comprises the unified digest data structure, and deploying the smart contract in the blockchain.

5. The method according to claim 4, wherein the building a unified digest data structure based on a service processing identifier and the service operation content description comprises the following:

building the unified digest data structure based on additional service operation information, the service processing identifier, and the service operation content description.

6. The method according to claim 5, wherein the generating a smart contract that comprises the unified digest data structure comprises the following:

determining a mapping relationship between a service processing node that the target service relates to and at least one additional information field that needs to be comprised in additional service operation information that is added for the service processing node; and

generating a smart contract that comprises the unified digest data structure and the mapping relationship.

7. The method according to claim 6, wherein the determining, from the feature values corresponding to the plurality of service data fields, a feature value corresponding to each target data field that matches the at least one predetermined digest information field comprises the following:

determining, based on the mapping relationship, at least one additional information field that corresponds to the service processing node that generates the service data to be chained; and

determining, from the feature values corresponding to the plurality of service data fields, a feature value corresponding to each target data field that matches the at least one additional information field.

8. The method according to claim 2, wherein the determining, from the feature values corresponding to the plurality of service data fields, a feature value corresponding to each target data field that matches the at least one predetermined digest information field comprises the following:

determining public service data fields and private service data fields based on field annotation information that is used to represent data privacy attributes and that is corresponding to the service data fields; and

determining the feature value corresponding to each target data field that matches the at least one predetermined digest information field from feature values corresponding to the public service data fields.

9. The method according to claim 1, wherein the storing the service data digest information and the service data to be chained in the blockchain comprises the following:

uploading service processing timestamps, the service data digest information, and the service data to be chained to the blockchain; and

associatively storing the service data digest information corresponding to each service processing node for the target service in descending order of the service processing timestamps.

10. The method according to claim 1, wherein the sending the service data digest information and the chained service data to the service data query terminal

comprises the following:

sorting the service data digest information of the plurality of service processing nodes corresponding to the service processing order identifier in descending order of service processing timestamps; and

sending the sorted service data digest information and the corresponding chained service data to the service data query terminal.

11. An apparatus for chaining service data, comprising the following:

a service data acquisition module, configured to obtain service data to be chained that is generated for each service processing node for a target service, wherein the service data to be chained comprises feature values corresponding to a plurality of service data fields;

a digest information generation module, configured to invoke a smart contract deployed in a blockchain to generate, based on the feature values corresponding to the plurality of service data fields and at least one predetermined digest information field, service data digest information corresponding to the service processing node, wherein the at least one predetermined digest information field comprises at least one specified data field in a unified digest data structure built for a plurality of service processing nodes;

a module for chaining service data, configured to store the service data digest information and the service data to be chained in the blockchain;

a query request response module, configured to: receive a data query request from a service data query terminal, and the data query request comprises a service processing order identifier of the target service; obtain service data digest information and chained service data of a plurality of service processing nodes corresponding to the service processing order identifier from the blockchain; and

send the service data digest information and the chained service data to the service data query terminal, so that the service data query terminal displays the service data digest information based on the unified digest data structure.

12. The apparatus according to claim 11, wherein the digest information generation module is configured to:

determine, from the feature values corresponding to the plurality of service data fields, a feature value corresponding to each target data field that matches the at least one predetermined digest information field; and

generate, based on the feature value of the target data field, the service data digest information corresponding to the service processing node.

13. The apparatus according to claim 12, wherein the digest information generation module is configured to:

assign a value to each specified data field in the unified digest data structure based on the feature value of the target data field, to obtain a post-assignment unified digest data structure; and

determine the post-assignment unified digest data structure as the service data digest information corresponding to the service processing node.

14. The apparatus according to claim 12, further comprising a smart contract deployment module, configured to:

determine a combination of a service executor, a service processing action type, and a service operation object as a specified data field representing a service operation content description of the service processing node;

build a unified digest data structure based on a service processing identifier and the service operation content description; and

generate a smart contract that comprises the unified digest data structure, and deploy the smart contract in the blockchain.

15. The apparatus according to claim 14, wherein the smart contract deployment module is configured to:

build the unified digest data structure based on additional service operation information, the service processing identifier, and the service operation content description.

16. The apparatus according to claim 15, wherein the smart contract deployment module is configured to:

determine a mapping relationship between a service processing node that the target service relates to and at least one additional information field that needs to be comprised in additional service operation information that is added for the service processing node; and

generate a smart contract that comprises the unified digest data structure and the mapping relationship.

17. The apparatus according to claim 16, wherein the digest information generation module is configured to:

determine, based on the mapping relationship, at least one additional information field that corresponds to the service processing node that generates the service data to be chained; and

determine, from the feature values corresponding to the plurality of service data fields, a feature value corresponding to each target data field that matches the at least one additional information field.

18. The apparatus according to claim 12, wherein the digest information generation module is configured to:

determine public service data fields and private service data fields based on field annotation information that is used to represent data privacy attributes and that is corresponding to the service data fields; and

determine the feature value corresponding to each target data field that matches the at least one predetermined digest information field from feature values corresponding to the public service data fields.

19. The apparatus according to claim 11, wherein the module for chaining service data is configured to:

upload service processing timestamps, the service data digest information, and the service data to be chained to the blockchain; and

associatively store the service data digest information corresponding to each service processing node for the target service in descending order of the service processing timestamps.

20. The apparatus according to claim 11, wherein the query request response module is configured to:

sort the service data digest information of the plurality of service processing nodes corresponding to the service processing order identifier in descending order of service processing timestamps; and

send the sorted service data digest information and the corresponding chained service data to the service data query terminal.

21. A device for chaining service data, comprising the following:

a processor; and

a memory arranged to store computer-executable instructions, wherein when being executed, the executable instructions enable the processor to:

obtain service data to be chained that is generated for each service processing node for a target service, wherein the service data to be chained comprises feature values corresponding to a plurality of service data fields;

invoke a smart contract deployed in a blockchain to generate, based on the feature values corresponding to the plurality of service data fields and at least one predetermined digest information field, service data digest information corresponding to the service processing node, wherein the at least one predetermined digest information field comprises at least one specified data field in a unified digest data structure built for a plurality of service processing nodes;

store the service data digest information and the service data to be chained in the blockchain;

receive a data query request from a service data query terminal, wherein the data query request comprises a service processing order identifier of the target service;

obtain service data digest information and chained service data of a plurality of service processing nodes corresponding to the service processing order identifier from the blockchain; and

send the service data digest information and the chained service data to the service data query terminal, so that the service data query terminal displays the service data digest information based on the unified digest data structure.

22. A storage medium, configured to store computer-executable instructions, wherein the executable instructions are executed by a processor to implement the following method:

obtaining service data to be chained that is generated for each service processing node for a target service, wherein the service data to be chained comprises feature values corresponding to a plurality of service data fields;

invoking a smart contract deployed in a blockchain to generate, based on the feature values corresponding to the plurality of service data fields and at least one predetermined digest information field, service data digest information corresponding to the service processing node, wherein the at least one predetermined digest information field comprises at least one specified data field in a unified digest data structure built for a plurality of service processing nodes;

storing the service data digest information and the service data to be chained

in the blockchain;

receiving a data query request from a service data query terminal, wherein the data query request comprises a service processing order identifier of the target service;

obtaining service data digest information and chained service data of a plurality of service processing nodes corresponding to the service processing order identifier from the blockchain; and

sending the service data digest information and the chained service data to the service data query terminal, so that the service data query terminal displays the service data digest information based on the unified digest data structure.