CLAIMS

What is claimed is:

1. An invoice invalidation method based on a blockchain, comprising:

receiving an invalidation request that is initiated by an invoice invalidation party for a target invoice recorded in the blockchain;

in response to the invalidation request, determining whether the invoice invalidation party has authority to invalidate the target invoice; and

in response to that the invoice invalidation party has the authority to invalidate the target invoice, invoking an invoice invalidation logic provided in a smart contract deployed in a blockchain network of the blockchain to invalidate the target invoice by updating a state of the target invoice from a valid state to an invalid state via a state identifier that is set for the target invoice.

2. The method according to claim 1, wherein:

the smart contract further provides an authority verification logic for the invoice invalidation party; and

the determining whether the invoice invalidation party has authority to invalidate the target invoice includes:

invoking the authority verification logic provided in the smart contract to determine whether the invoice invalidation party has the authority to invalidate the target invoice.

3. The method according to claim 1, wherein:

the invalidation request includes a user identifier of the invoice invalidation party; and

the determining whether the invoice invalidation party has authority to invalidate the target invoice includes:

determining, based on the user identifier, whether the invoice invalidation party is an issuer of the target invoice or a trusted third party; and

in response to that the invoice invalidation party is the~~an~~ issuer of the target invoice or the~~a~~ trusted third party, determining that the invoice invalidation party has the authority to invalidate the target invoice.

4. The method according to claim 1, wherein:

the invalidation request includes an invoice identifier of the target invoice; and

the method further includes:

determining, based on the invoice identifier, whether an invoice corresponding to the invoice identifier is stored in the blockchain; and

in response to that the invoice corresponding to the invoice identifier is stored in the blockchain, determining the invoice as the target invoice.

5. The method according to claim 4, wherein the invoice identifier includes~~:~~

a hash value obtained through hash calculation based on an invoice content; or

a hash value obtained through hash calculation based on a piece of uniqueness information in the invoice content.

~~6. The method according to claim 1, wherein the state of the target invoice is recorded in the blockchain.~~

6~~7~~. An invoice invalidation method based on a blockchain, comprising:

obtaining a transaction that has been recorded in the blockchain;

determining whether the transaction is a refund transaction corresponding to a payment transaction that has been recorded in the blockchain; and

in response to the transaction is the~~a~~ refund transaction corresponding to the payment transaction, invoking an invoice invalidation logic provided in a smart contract deployed in a blockchain network of the blockchain to invalidate a target invoice that is related to the payment transaction and recorded in the blockchain by updating a state of the target invoice from a valid state to an invalid state via a state identifier that is set for the target invoice.

~~8~~7. The method according to claim ~~7~~6, wherein:

the smart contract further provides a transaction matching logic; and

the determining whether the transaction is a refund transaction corresponding to the payment transaction that has been recorded in the blockchain includes:

invoking the transaction matching logic provided in the smart contract to determine whether the transaction matches the payment transaction that has been recorded in the blockchain.

~~9~~8. The method according to claim ~~7~~6, comprising:

determining, based on an invoice identifier corresponding to the payment transaction, whether an invoice corresponding to the invoice identifier is stored in the blockchain; and

in response to that the invoice corresponding to the invoice identifier is stored in the blockchain, determining the invoice as the target invoice.

~~10~~9. The method according to claim ~~9~~8, wherein the invoice identifier includes:

a hash value obtained through hash calculation based on an invoice content; or

a hash value obtained through hash calculation based on a piece of uniqueness information in the invoice content.

~~11. The method according to claim 7, wherein the state of the target invoice is recorded in the blockchain.~~

~~12~~10. An electronic device, comprising:

a processor; and

a memory storing machine-executable instructions,

wherein by reading and executing the machine-executable instructions stored in the memory and corresponding to control logic for invoice invalidation based on a blockchain, the processor is enabled to perform acts including:

receiving an invalidation request that is initiated by an invoice invalidation party for a target invoice recorded in the blockchain;

in response to the invalidation request, determining whether the invoice invalidation party has authority to invalidate the target invoice; and

in response to that the invoice invalidation party has the authority to invalidate the target invoice, invoking an invoice invalidation logic provided in a smart contract deployed in a blockchain network of the blockchain to invalidate the target invoice by updating a state of the target invoice from a valid state to an invalid state via a state identifier that is set for the target invoice.

~~13~~11. The electronic device according to claim ~~12~~10, wherein:

the smart contract further provides an authority verification logic for the invoice invalidation party; and

the determining whether the invoice invalidation party has authority to invalidate the target invoice includes:

invoking the authority verification logic provided in the smart contract to determine whether the invoice invalidation party has the authority to invalidate the target invoice.

~~14~~12. The electronic device according to claim ~~12~~10, wherein:

the invalidation request includes a user identifier of the invoice invalidation party; and

the determining whether the invoice invalidation party has authority to invalidate the target invoice includes:

determining, based on the user identifier, whether the invoice invalidation party is an issuer of the target invoice or a trusted third party; and

in response to that the invoice invalidation party is the~~an~~ issuer of the target invoice or the~~a~~ trusted third party, determining that the invoice invalidation party has the authority to invalidate the target invoice.

~~15~~13. The electronic device according to claim ~~12~~10, wherein:

the invalidation request includes an invoice identifier of the target invoice; and

the ~~method~~acts further include~~s~~:

determining, based on the invoice identifier, whether an invoice corresponding to the invoice identifier is stored in the blockchain; and

in response to that the invoice corresponding to the invoice identifier is stored in the blockchain, determining the invoice as the target invoice.

~~16~~14. The electronic device according to claim ~~15~~13, wherein the invoice identifier includes:

a hash value obtained through hash calculation based on an invoice content; or

a hash value obtained through hash calculation based on a piece of uniqueness information in the invoice content.

~~17. The electronic device according to claim 12, wherein the state of the target invoice is recorded in the blockchain.~~

~~18~~15. An electronic device, comprising:

a processor; and

a memory storing machine-executable instructions,

wherein by reading and executing the machine-executable instructions stored in the memory and corresponding to control logic for invoice invalidation based on a blockchain, the processor is enabled to perform acts including:

obtaining a transaction that has been recorded in the blockchain;

determining whether the transaction is a refund transaction corresponding to a payment transaction that has been recorded in the blockchain; and

in response to the transaction is the~~a~~ refund transaction corresponding to the payment transaction, invoking an invoice invalidation logic provided in a smart contract deployed in a blockchain network of the blockchain to invalidate a target invoice that is related to the payment transaction and recorded in the blockchain by updating a state of the target invoice from a valid state to an invalid state via a state identifier that is set for the target invoice.

~~19~~16. The electronic device according to claim ~~18~~15, wherein:

the smart contract further provides a transaction matching logic; and

the determining whether the transaction is a refund transaction corresponding to the payment transaction that has been recorded in the blockchain includes:

invoking the transaction matching logic provided in the smart contract to determine whether the transaction matches the payment transaction that has been recorded in the blockchain.

~~20~~17. The electronic device according to claim ~~18~~15, wherein the acts include:

determining, based on an invoice identifier corresponding to the payment transaction, whether an invoice corresponding to the invoice identifier is stored in the blockchain; and

in response to that the invoice corresponding to the invoice identifier is stored in the blockchain, determining the invoice as the target invoice.

~~21~~18. The electronic device according to claim ~~20~~17, wherein the invoice identifier includes:

a hash value obtained through hash calculation based on an invoice content; or

a hash value obtained through hash calculation based on a piece of uniqueness information in the invoice content.

~~22. The electronic device according to claim 18, wherein the state of the target invoice is recorded in the blockchain.~~