CLAIMS

What is claimed is:

1. A fare payment method, wherein an application is installed on a terminal device that supports host-based card emulation (HCE), and the method comprises:

receiving, by the application, an HCE-based routing instruction sent by an operating system of the terminal device, wherein the HCE-based routing instruction is sent by a collection device of a public transportation system to the terminal device;

establishing, by the application, a near field communication (NFC) connection with the collection device in response to the HCE-based routing instruction;

receiving, by using the NFC connection, a public transportation system identifier sent by the collection device;

obtaining, by the application, voucher-related data of a user, the voucher-related data of the user corresponding to the public transportation system identifier;

generating, by the application, the payment-related data information of the user based on the voucher-related data of the user; and

transmitting the payment-related data information of the user to the collection device by using the NFC connection, so that the collection device deducts a fare from an account of the user based on the payment-related data information after verification on the payment-related data information succeeds.

2. The method according to claim 1, wherein transmitting the payment-related data information of the user to the collection device specifically comprises:

encrypting the payment-related data information based on an encryption algorithm pre-agreed on with the public transportation system, to obtain encrypted information; and

transmitting the encrypted information to the collection device, so that the collection device decrypts the encrypted information based on a decryption algorithm corresponding to the encryption algorithm, to obtain the payment-related data information.

3. The method according to claim 1, wherein before transmitting the payment-related data information of the user to the collection device, the method further comprises:

receiving, by using the NFC connection, a data offset sent by the collection device; and

transmitting the payment-related data information to the collection device specifically comprises:

splitting the payment-related data information into data packets based on the data offset; and

transmitting the data packets to the collection device, so that the collection device assembles the data packets into the payment-related data information based on the data offset.

4. The method according to claim 1, wherein the method further comprises:

receiving, by using the NFC connection, a verification result that is of the payment-related data information and that is sent by the collection device, and displaying the verification result.

5. A fare payment method, comprising:

sending, by a collection device of a public transportation system, an HCE-based routing instruction to a terminal device, so that an operating system of the terminal device sends the HCE-based routing instruction to an application installed on the terminal device based on an application identifier of the application comprised in the HCE-based routing instruction;

establishing an NFC connection with the application in response to the HCE-based routing instruction;

sending a public transportation system identifier stored in the collection device to the application by using the NFC connection, wherein the public transportation system identifier is used by the application to generate payment-related data information;

receiving, by using the NFC connection, the payment-related data information that is transmitted by the application and that is generated based on using the public transportation system identifier; and

verifying the payment-related data information; and if the verification succeeds, deducting a fare from an account of a user based on the payment-related data information.

6. The method according to claim 5, wherein receiving the payment-related data information transmitted by the application specifically comprises:

receiving encrypted information transmitted by the application, wherein the encrypted information is obtained by the application by encrypting the payment-related data information of the user based on an encryption algorithm pre-agreed on with the public transportation system; and

decrypting the encrypted information based on a decryption algorithm corresponding to the encryption algorithm, to obtain the payment-related data information.

7. The method according to claim 5, wherein before receiving the payment-related data information transmitted by the application, the method further comprises:

sending a data offset to the application by using the NFC connection; and

receiving the payment-related data information transmitted by the application specifically comprises:

receiving data packets transmitted by the application, wherein the data packets are obtained by the application by splitting the payment-related data information of the user based on the data offset; and

assembling the data packets into the payment-related data information based on the data offset.

8. The method according to claim 5, wherein the method further comprises:

sending a verification result of the payment-related data information to the application by using the NFC connection, so that the application displays the verification result.

9. A fare payment method, wherein an application is installed on a terminal device that supports host-based card emulation (HCE), and the method comprises:

receiving, by an operating system of the terminal device, an HCE-based routing instruction sent by a collection device of a public transportation system;

determining, based on an HCE function and an application identifier comprised in the HCE-based routing instruction, the application that is installed on the terminal device and that corresponds to the application identifier;

sending the HCE-based routing instruction to the application, so that the application establishes a near field communication (NFC) connection with the collection device based on the HCE-based routing instruction; and

receiving, at the application and by using the NFC connection, a public transportation system identifier sent by the collection device, so that the application generates payment-related data information of a user based on using the public transportation system identifier, and transmits the payment-related data information of the user to the collection device by using the NFC connection, so that the collection device deducts a fare from an account of the user based on the payment-related data information after verification on the payment-related data information succeeds.

10. A fare payment apparatus, wherein the apparatus is installed on a terminal device that supports host-based card emulation (HCE), and the apparatus comprises:

a first receiving module, configured to receive an HCE-based routing instruction sent by an operating system of the terminal device, wherein the HCE-based routing instruction is sent by a collection device of a public transportation system to the terminal device;

a connection module, configured to enable the apparatus to establish a near field communication (NFC) connection with the collection device in response to the HCE-based routing instruction;

a second receiving module, configured to receive, by using the NFC connection, a public transportation system identifier sent by the collection device;

an acquisition module, configured to obtain voucher-related data of a user, the voucher-related data of the user corresponding to the public transportation system identifier, and generate payment-related data information of the user based on the voucher-related data of the user; and

a transmission module, configured to transmit the payment-related data information of the user to the collection device by using the NFC connection, so that

the collection device deducts a fare from an account of the user based on the payment-related data information after verification on the payment-related data information succeeds.

11. The apparatus according to claim 10, wherein the transmission module is configured to encrypt the payment-related data information based on an encryption algorithm pre-agreed on with the public transportation system, to obtain encrypted information; and transmit the encrypted information to the collection device, so that the collection device decrypts the encrypted information based on a decryption algorithm corresponding to the encryption algorithm, to obtain the payment-related data information.

12. The apparatus according to claim 10, wherein the apparatus further comprises a third receiving module, configured to: before the transmission module transmits the payment-related data information of the user to the collection device, receive, by using the NFC connection, a data offset sent by the collection device; and

the transmission module is configured to split the payment-related data information into data packets based on the data offset; and transmit the data packets to the collection device, so that the collection device assembles the data packets into the payment-related data information based on the data offset.

13. The apparatus according to claim 10, wherein the apparatus further comprises a display module, configured to receive, by using the NFC connection, a verification result that is of the payment-related data information and that is sent by the collection device, and display the verification result.

14. A fare payment apparatus, comprising:

a first sending module, configured to send an HCE-based routing instruction to a terminal device, so that an operating system of the terminal device sends the HCE-based routing instruction to an application installed on the terminal device based on an application identifier of the application comprised in the HCE-based routing instruction;

a connection module, configured to establish an NFC connection with the application in response to the HCE-based routing instruction;

a second sending module, configured to send a public transportation system identifier stored in the apparatus to the application by using the NFC connection, so that the application generates payment-related data information based on the public transportation system identifier;

a receiving module, configured to receive, by using the NFC connection, the payment-related data information transmitted by the application; and

a verification module, configured to verify the payment-related data information; and if the verification succeeds, deduct a fare from an account of a user based on the payment-related data information.

15. The apparatus according to claim 14, wherein the receiving module is configured to receive encrypted information transmitted by the application, wherein the encrypted information is obtained by the application by encrypting the payment-related data information of the user based on an encryption algorithm pre-agreed on with the apparatus; and decrypt the encrypted information based on a decryption algorithm corresponding to the encryption algorithm, to obtain the payment-related data information.

16. The apparatus according to claim 14, wherein the apparatus further comprises a third sending module, configured to: before the receiving module receives the payment-related data information transmitted by the application, send a data offset to the application by using the NFC connection; and

the receiving module is configured to receive data packets transmitted by the application, wherein the data packets are obtained by the application by splitting the payment-related data information of the user based on the data offset; and assemble the data packets into the payment-related data information based on the data offset.

17. The apparatus according to claim 14, wherein the apparatus further comprises a fourth sending module, configured to send a verification result of the payment-related data information to the application by using the NFC connection, so that the application displays the verification result.

18. A fare payment apparatus, wherein an application is installed on a terminal device that supports host-based card emulation (HCE), and the apparatus comprises:

a receiving module, configured to i) receive an HCE-based routing instruction sent by a collection device of a public transportation system ii) receive a public transportation system identifier sent by the collection device by using a near field communication (NFC) connection;

a determining module, configured to determine, based on an HCE function and an application identifier comprised in the HCE-based routing instruction, the application that is installed on the terminal device and that corresponds to the application identifier; and

a sending module, configured to i) send the HCE-based routing instruction to the application, so that the application establishes the near field communication (NFC) connection with the collection device based on the HCE-based routing instruction, and transmits payment-related data information of a user that has been generated based on the public transportation system identifier to the collection device by using the NFC connection, so that the collection device deducts a fare from an account of the user based on the payment-related data information after verification on the payment-related data information succeeds.

19. A terminal device, wherein the terminal device supports host-based card emulation (HCE) and the terminal device comprises one or more processors and memories, the memories store programs, and the programs are configured to be executed by the one or more processors to perform the following steps:

receiving a routing instruction sent by a collection device of a public transportation system;

establishing a near field communication (NFC) connection with the collection device in response to the routing instruction;

receiving a public transportation system identifier sent by the collection device by using the NFC connection;

obtaining voucher-related data of a user, the voucher-related data of the user corresponding to the public transportation system identifier;

generating payment-related data information of the user based on the voucher-related data of the user; and

transmitting the payment-related data information of the user to the collection device by using the NFC connection, so that the collection device deducts a fare from an account of the user based on the payment-related data information after verification on the payment-related data information succeeds.

20. A collection device, comprising one or more processors and memories, wherein the memories store programs, and the programs are configured to be executed by the one or more processors to perform the following steps:

sending an HCE-based routing instruction to a terminal device, so that an operating system of the terminal device sends the HCE-based routing instruction to an application installed on the terminal device based on an application identifier of the application comprised in the HCE-based routing instruction;

establishing an NFC connection with the application in response to the HCE-based routing instruction;

sending a public transportation system identifier stored in the collection device to the application by using the NFC connection, wherein the public transportation system identifier is used by the application to generate payment-related data information;

receiving, by using the NFC connection, payment-related data information that is transmitted by the application and that is generated based on using the public transportation system identifier; and

verifying the payment-related data information; and if the verification succeeds, deducting a fare from an account of a user based on the payment-related data information.