CLAIMS

What is claimed is:

~~1. A device for paying transportation fares, comprising a recharging module and a transportation fares payment module, wherein~~

~~the transportation fares payment module is configured to store a transportation fares amount of a user, perform a transportation fares deduction operation for the user with a transportation charging terminal when performing near field communication with the transportation charging terminal, and record a transportation fares amount of the user obtained after transportation fares are deducted; and~~

~~the recharging module is configured to perform near field communication with the transportation fares payment module to read the transportation fares amount recorded by the transportation fares payment module, and send a recharging request to a transaction server when i) the transportation fares amount is less than a specified threshold and ii) a recharging application is enabled, wherein the recharging module is applied to the recharging application in the device.~~

~~2. The device according to claim 1, wherein the device further comprises a first near field communication module and a second near field communication module; and~~

~~the transportation fares payment module is configured to perform near field communication with the recharging module by using the first near field communication module, and perform near field communication with the transportation charging terminal by using the second near field communication module.~~

~~3. The device according to claim 1 or 2, wherein the transportation fares payment module is a secure element (SE) chip.~~

~~4. The device according to claim 2, wherein the~~

~~recharging module performs the near field communication with the transportation fares payment module, and sends the recharging request when either one of the following conditions is met:~~

~~the transportation fares payment module performs the transportation fares deduction operation;~~

~~and~~

~~a current moment reaches a specified moment at which the transportation fares amount recorded by the transportation fares payment module is read.~~

~~5. The device according to claim 2 or 4, wherein the recharging module is further configured to:~~

~~obtain a transportation fares amount of the user after recharging from the transaction server, and send the transportation fares amount of the user after recharging to the transportation fares payment module by using the first near field communication module, so that the transportation fares payment module updates the transportation fares amount recorded by the transportation fares payment module.~~

~~6. The device according to claim 2, wherein the transportation fares payment module is further configured to:~~

~~record transaction information between the transportation fares payment module and the transportation charging terminal, and send the transaction information to the recharging module by using the first near field communication module; and~~

~~the recharging module is further configured to receive, by using the first near field communication module, the transaction information sent by the transportation fares payment module, and upload the transaction information to the transaction server.~~

~~7. A combination of devices for paying transportation fares, comprising a recharging device and a transportation fares payment device, wherein the recharging device comprises a recharging module, and the transportation fares payment device comprises a transportation fares payment module;~~

~~the transportation fares payment module is configured to store a transportation fares amount of a user, perform a transportation fares deduction operation for the user with a transportation charging terminal when performing near field communication with the transportation charging terminal, and record a transportation fares amount of the user obtained after transportation fares are deducted; and~~

~~the recharging module is configured to perform near field communication with the transportation fares payment module to read the transportation fares amount recorded by the transportation fares payment module, and send a recharging request to a transaction server when i) the transportation fares amount is less than a specified threshold and ii) a recharging application is enabled, wherein the recharging module is applied to the recharging application in the recharging device.~~

~~8. The device according to claim 7, wherein the transportation fares payment device further comprises a first near field communication module and a second near field communication module; and~~

~~the transportation fares payment module is configured to perform near field~~

communication with the recharging module by using the first near field communication module, and perform near field communication with the transportation charging terminal by using the second near field communication module.

9. The device according to claim 7 or 8, wherein

the recharging module performs the near field communication with the transportation fares payment module, and sends the recharging request when either of the following conditions is met:

the transportation fares payment module performs the transportation fares deduction operation;

and

a current moment reaches a specified moment at which the transportation fares amount recorded by the transportation fares payment module is read.

10. A system for paying transportation fares, comprising a transaction server and the device for paying transportation fares according to any one of claims 1 to 6, wherein

the device for paying transportation fares is configured to store a transportation fares amount of a user, perform a transportation fares deduction operation for the user with a transportation charging terminal when performing near field communication with the transportation charging terminal, and record a transportation fares amount of the user obtained after transportation fares are deducted, and is further configured to send a recharging request to the transaction server when the transportation fares amount recorded by the device for paying transportation fares is less than a specified threshold; and the transaction server is configured to receive the recharging request sent by the device for paying transportation fares, and perform a recharging operation for the recharging request.

11. The system according to claim 10, wherein the device for paying transportation fares is further configured to:

obtain a transportation fares amount of the user after recharging from the transaction server, and update the transportation fares amount recorded by the device for paying transportation fares to the transportation fares amount of the user after recharging.

12. The system according to claim 10, wherein the system further comprises a settlement server; and

the settlement server is configured to receive transaction information periodically uploaded by the transportation charging terminal, and is further configured to receive

recharging information of the user sent by the transaction server, and perform settlement based on the transaction information and the recharging information, wherein the transaction information comprises at least a time of each transaction, address information of each transaction, and an amount of each transaction.

13. A system for paying transportation fares, comprising a transaction server, a recharging device, and a transportation fares payment device, wherein

the transportation fares payment device is configured to store a transportation fares amount of a user, perform a transportation fares deduction operation for the user with a transportation charging terminal when performing near field communication with the transportation charging terminal, and record a transportation fares amount of the user obtained after transportation fares are deducted;

the recharging device comprises a recharging module and is configured to perform near field communication with the transportation fares payment device to read the transportation fares amount recorded by the transportation fares payment device, and send a recharging request to the transaction server when i) the transportation fares amount is less than a specified threshold and ii) a recharging application is enabled, wherein the recharging module is applied to the recharging application in the recharging device; and

the transaction server is configured to receive the recharging request sent by the recharging device, and perform a recharging operation for the recharging request.

14. A method for paying transportation fares, wherein the method comprises:

performing, by a transportation fares payment module, near field communication with a transportation charging terminal, and performing a transportation fares deduction operation for a user with the transportation charging terminal, wherein the transportation fares payment module stores a transportation fares amount of the user;

recording, by the transportation fares payment module, a transportation fares amount of the user obtained after transportation fares are deducted; and

performing, by a recharging module, near field communication with the transportation fares payment module to read the transportation fares amount recorded by the transportation fares payment module, and sending a recharging request to a transaction server when i) the transportation fares amount is less than a specified threshold and ii) a recharging application is enabled, wherein the recharging module is applied to the recharging application.

15. The method according to claim 14, wherein the method further comprises:

~~obtaining, by the recharging module, a transportation fares amount of the user after recharging from the transaction server, and sending the transportation fares amount of the user after recharging to the transportation fares payment module by using a first near field communication module; and~~

~~updating, by the transportation fares payment module based on the transportation fares amount of the user after recharging, the transportation fares amount recorded by the transportation fares payment module.~~

1. A computer-implemented method for paying transportation fare, the method comprising:

communicating, by a first mobile device to a toll terminal based on near field communication (NFC) technology, for paying a fare for using a transport system associated with the toll terminal;

deducting, through a user account associated with the first mobile device, the fare from an account balance associated with the user account;

recording, by the first mobile device, a remaining account balance associated with the user account after the fare is deducted;

determining, by the first mobile device, that the remaining account balance is less than a predetermined threshold;

providing, by the first mobile device, the remaining account balance to a second mobile device over the NFC technology in response to determining that the remaining account balance is less than the predetermined threshold to trigger a request from the second mobile device to a transaction server to add a predetermined balance to the user account, wherein the request to the transaction server is automatically triggered by opening an application associated with the user account on the second mobile device, and the predetermined balance is preset through the application; and

providing, by the first mobile device, transactions associated with the user account performed by using the first mobile device to communicate with the second mobile device through the NFC technology, to be forwarded by the second mobile device to a settlement server via the transaction server, wherein the transactions are used by the settlement server in combination with charging information uploaded by the toll terminal to the settlement server.

2. The computer-implemented method according to claim 1, wherein the first mobile device comprises a first NFC module and a second NFC module, and wherein the NFC

technology with the toll terminal is performed by using the first NFC module and the NFC technology with the second mobile device is performed by using the second NFC module.

3. The computer-implemented method according to claim 2, wherein the request to the transaction server is further triggered by one or more of the deducting the fare from the account balance, or a predetermined time set for the user account is reached.

4. The computer-implemented method according to claim 1, wherein the NFC technology with the toll terminal is performed by a secure element (SE) chip of the first mobile device, and the account balance is stored in the SE chip.

5. The computer-implemented method according to claim 4, further comprising:

receiving, by the first mobile device through the NFC technology, a new account balance from the second mobile device after the predetermined balance is added to the remaining account balance by the transaction server; and

recording, by the first mobile device, the new account balance to the SE chip.

6. The computer-implemented method according to claim 1, wherein the first mobile device is a wearable device and the second mobile device is a mobile phone.

7. A computer-implemented system for paying transportation fare, comprising:

one or more computers; and

one or more computer memory devices interoperably coupled with the one or more computers and having tangible, non-transitory, machine-readable media storing one or more instructions that, when executed by the one or more computers, perform operations comprising:

communicating with a toll terminal based on near field communication (NFC) technology, for paying a fare for using a transport system associated with the toll terminal;

deducting, through a user account, the fare from an account balance associated with the user account;

recording a remaining account balance associated with the user account after the fare is deducted;

determining that the remaining account balance is less than a predetermined threshold;

providing the remaining account balance to a second mobile device over the NFC technology in response to determining that the remaining account balance is less than the predetermined threshold to trigger a request from the second mobile device to a transaction server to add a predetermined balance to the user account, wherein the request to the transaction server is automatically triggered by opening an application associated with the user account on the second mobile device, and the predetermined balance is preset through the application; and

providing, by the computer-implemented system, transactions associated with the user account performed by using the computer-implemented system to communicate with the second mobile device through the NFC technology, to be forwarded by the second mobile device to a settlement server via the transaction server, wherein the transactions are used by the settlement server in combination with charging information uploaded by the toll terminal to the settlement server.

8. The computer-implemented system according to claim 7, wherein the computer-implemented system comprises a first NFC module and a second NFC module, and wherein the NFC technology with the toll terminal is performed by using the first NFC module and the NFC technology with the second mobile device is performed by using the second NFC module.

9. The computer-implemented system according to claim 8, wherein the request to the transaction server is further triggered by one or more of the deducting the fare from the account balance, or a predetermined time set for the user account is reached.

10. The computer-implemented system according to claim 7, wherein the NFC technology with the toll terminal is performed by a secure element (SE) chip of the computer-implemented system, and the account balance is stored in the SE chip.

11. The computer-implemented system according to claim 10, the operations further comprising:

receiving, by the computer-implemented system through the NFC technology, a new account balance from the second mobile device after the predetermined balance is

added to the remaining account balance by the transaction server; and

recording, by the computer-implemented system, the new account balance to the SE chip.

12. The computer-implemented system according to claim 7, wherein the computer-implemented system is a wearable device and the second mobile device is a mobile phone.

13. A non-transitory, computer-readable medium storing one or more instructions thereon, the instructions executable by a computer system to perform operations for paying transportation fare, the operations comprising:

communicating to a toll terminal based on near field communication (NFC) technology, for paying a fare for using a transport system associated with the toll terminal;

deducting, through a user account, the fare from an account balance associated with the user account;

recording a remaining account balance associated with the user account after the fare is deducted;

determining that the remaining account balance is less than a predetermined threshold;

providing the remaining account balance to a second mobile device over the NFC technology in response to determining that the remaining account balance is less than the predetermined threshold to trigger a request from the second mobile device to a transaction server to add a predetermined balance to the user account, wherein the request to the transaction server is automatically triggered by opening an application associated with the user account on the second mobile device, and the predetermined balance is preset through the application; and

providing, by the computer system, transactions associated with the user account performed by using the computer system to communicate with the second mobile device through the NFC technology, to be forwarded by the second mobile device to a settlement server via the transaction server, wherein the transactions are used by the settlement server in combination with charging information uploaded by the toll terminal to the settlement server.

14. The non-transitory, computer-readable medium according to claim 13, wherein the computer system comprises a first NFC module and a second NFC module, and wherein the NFC technology with the toll terminal is performed by using the first NFC module and the NFC technology with the second mobile device is performed by using the second NFC module.

15. The non-transitory, computer-readable medium according to claim 14, wherein the request to the transaction server is further triggered by one or more of the deducting the fare from the account balance, or a predetermined time set for the user account is reached.

16. The non-transitory, computer-readable medium according to claim 13, wherein the NFC technology with the toll terminal is performed by a secure element (SE) chip of the computer system, and the account balance is stored in the SE chip.

17. The non-transitory, computer-readable medium according to claim 16, the operations further comprising:

receiving, by the computer system through the NFC technology, a new account balance from the second mobile device after the predetermined balance is added to the remaining account balance by the transaction server; and

recording, by the computer system, the new account balance to the SE chip.

18. The non-transitory, computer-readable medium according to claim 13, wherein the computer system is a wearable device and the second mobile device is a mobile phone.